FIREPROOF HOUSES
OF
TERRA COTTA
HOLLOW TILE
AND
HOW TO BUILD THEM

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.... FIREPROOF ....
CONSTRUCTION

For Houses and Other Buildings of Moderate Cost

SECOND EDITION
PUBLISHED JUNE 1909.

National
Fire Proofing Company

Manufacturers of

TERRA COTTA
HOLLOW TILE

CONTRACTORS FOR
Fireproof Construction

CHICAGO OFFICE,
Commercial Nat'l Bank Bldg., Chicago, Ill.

NEW YORK,	Flat Iron Building	PITTSBURGH,	Fulton Building
PHILADELPHIA,	Land Title Building	BOSTON,	Old South Building
MINNEAPOLIS,	Lumber Exchange	CANTON, O.,	City Nat'l Bank Bldg.
WASHINGTON,	Colorado Building	SAN FRANCISCO,	Monadnock Bldg.
CINCINNATI,	Union Trust Building	TORONTO, CAN.,	Traders Bank Bldg.
CLEVELAND,	Cuyahoga Building	LONDON, ENG.,	27 Chancery Lane

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IN the preface to the first edition of this publication, which was published in January 1908, we called attention to the tremendous annual loss of residence property caused by fire.

Up to that time there had been but a very meagre amount of construction in fireproof residence buildings of moderate cost, and sources of information as to practical details of construction, cost, etc. were correspondingly scarce.

Since that time, however, there has been a surprisingly large increase in the use of Terra Cotta Hollow Tile for Residences, and the economy in the use of this material under actual building conditions has been a revelation to the architectural profession, as well as to the public.

The popularity of Terra Cotta Hollow Tile for Residence Construction has grown very rapidly, and probably one of the strongest evidences of its superiority is shown in the fact that a considerable number of architects are using it for the construction of their own homes.

During the short time we have been advocating the use of Terra Cotta Hollow Tile for residences, the value of this material has become so quickly and fully appreciated that at this time a very large number of buildings, embodying fourteen distinctly different types of constructions, have been and are being, built of hollow tile. The list is as follows:—

Residence, school, greenhouse, orangerie, market, bungalow, garage, stable, store, factory, post office, bottling plant, laboratory, hotel.

The material is equally adaptable to the workman's cottage or to the millionaire's home. One of the latter is now being built at a cost of $250,000.00.

Since the publication of our first edition, we have produced several special features in Hollow Tile Blocks, which have been found advantageous. These comprise our Special Wall Block, Jamb Block, and Wall-Corner Block,—all of which are described in the following pages.

Terra Cotta Hollow Tile is the standard fireproofing material. It is also one of the strongest, most efficient, and adaptable structural materials in present use. It is simply another form of Brick (the oldest and best structural material known) made to meet the requirements of modern building conditions.

Hollow Tile is an adaptation of two scientifically established facts, viz:—

1. Well burned clay cannot be destroyed by fire.

2. A dead air space is the best insulation against heat or cold and consequently, the best protection against the destructiveness of high temperatures as generated in burning buildings.

It is worth while for both architect and owner to bear in mind that the kind of buildings herein illustrated and described are not only Fire Resisting, but are of

ENDURING MASONRY CONSTRUCTION THROUGHOUT

That by reason of the indestructibility of the material and their substantial construction these houses

COST FAR LESS FOR MAINTENANCE AND REPAIRS

than is the case with buildings of frame or brick-and-wood.

Floors of wooden joist construction warp and crack. Floors of Fireproof Hollow Tile endure for all time.

Exteriors of frame houses must be painted frequently, walls of Cement Coated Terra Cotta Hollow Tile, never.

Stucco applied over expanded metal has never proven satisfactory. Dampness will invariably work through and will cause the wood studs and siding to expand and settle. This will cause unsightly cracks to appear in the wall.

This difficulty has been eliminated by the use of hollow tile, which not only forms an ideal bond with the stucco, but furnishes a masonry wall, which cannot settle.

Walls of wood or brick absorb, retain and carry to the interior of the house, the frosts of Winter and the heat of Summer. The air space in walls of Terra Cotta Hollow Tile furnishes complete insulation against atmospheric conditions, thereby reducing the cost of heating to a minimum, and buildings of this material compared with brick, frame, stone, concrete or a combination of all four are

WARMER IN WINTER — COOLER IN SUMMER.

Houses with walls of brick, concrete or frame, and furred with wood, carry sound and vibration and are subject to the penetration and ravages of vermin. Terra Cotta Hollow Tile Houses require no furring and are

MOISTURE PROOF — SOUND PROOF — VERMIN PROOF

When it is considered that a residence with all these advantages and completely Fireproof can be built at as low cost as one of brick, brick-and-wood, stone-and-wood, or concrete, and comparing favorably with frame, can there be any hesitation in adopting this modern method of construction?

In considering the illustrations and plans in this book it should be noted that they are simply types and examples of what has been and can be accomplished with Terra Cotta Hollow Tile, and the methods of construction in use to achieve these results.

A house of any desired size or architectural appearance may be built on the general ideas advanced herein. These ideas are offered as an aid to the architect in formulating plans for small buildings of substantial fireproof construction and any architect can readily adapt these principles to any building which he may be planning.

It will be seen that structural steel, which forms such a great item of cost in large standard fireproof buildings is entirely eliminated in buildings of the type considered in this work. The only manner in which steel is used at all in these buildings, is in the shape of small tension members for reinforcing purposes.

It is this elimination of structural steel and the simplicity of Hollow Tile construction, which makes it possible to build an enduring masonry residence fireproof throughout, within the limits of cost established by the average financial resources.

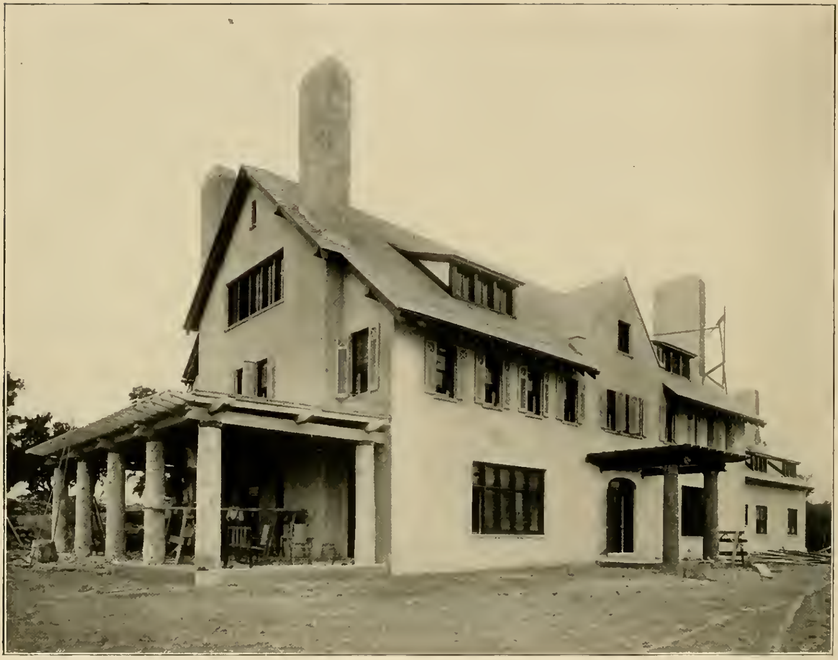


Plate 1. View of nearly completed house at Mt. Kisco, N. Y., 15 rooms. Dimensions at maximum points of width and length 41 x 116 feet.

The 15-room residence illustrated in Plates 1 to 4 inclusive, was built at Mt. Kisco, New York, designed by Delano and Aldrich, New York, architects.

The walls are of Terra Cotta Hollow Tile finished with a coat of cement stucco.

Floors are of Hollow Tile with reinforced concrete beams, or joists, alternating with the courses of tile as shown in Plate 22, and detailed in Figure 4, Page 66. The roof is of ordinary wood joist construction, shingled, and is the only part of the building which is of combustible construction.

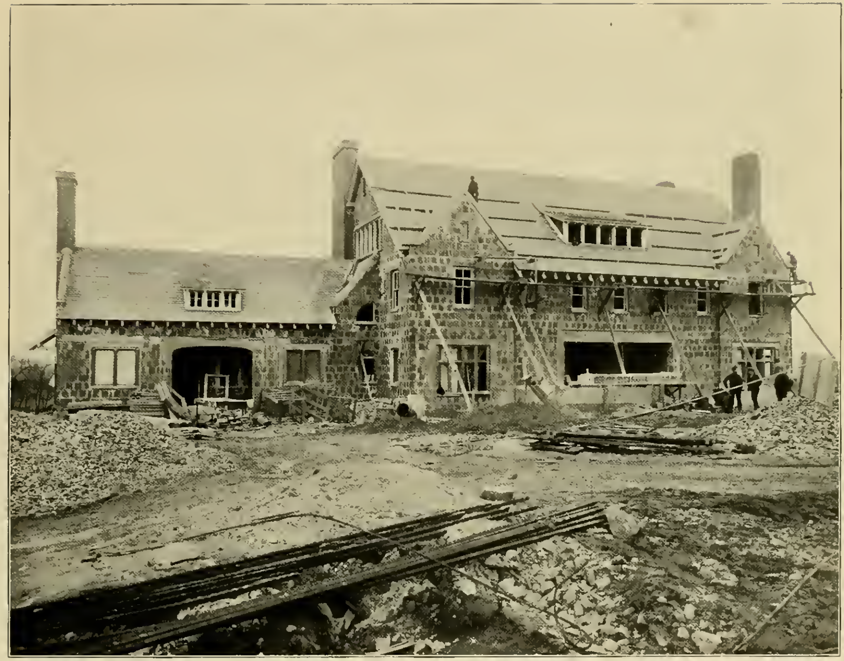


Plate 2. View of building at Mt. Kisco, N. Y., during construction, showing Terra Cotta Hollow Tile Fireproof Walls before they were covered with cement stucco finish.

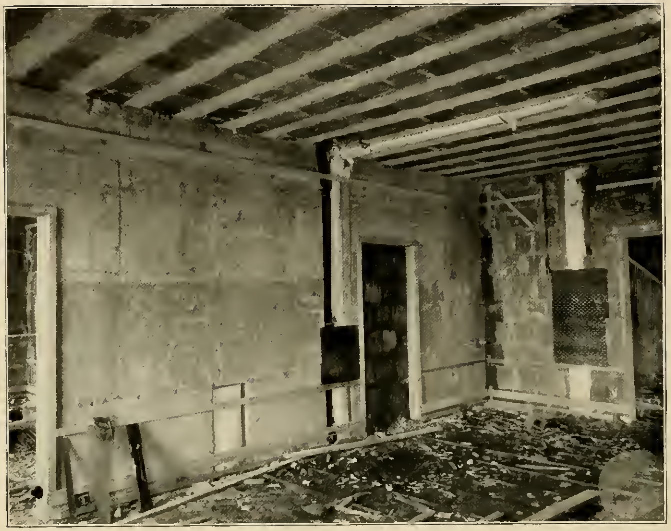


Plate 3.

View of portion of a room, during construction, showing Terra Cotta Hollow Tile reinforced floor construction and Hollow Tile partitions.

Plate 4.

View of same room showing finished floor, walls and ceiling.

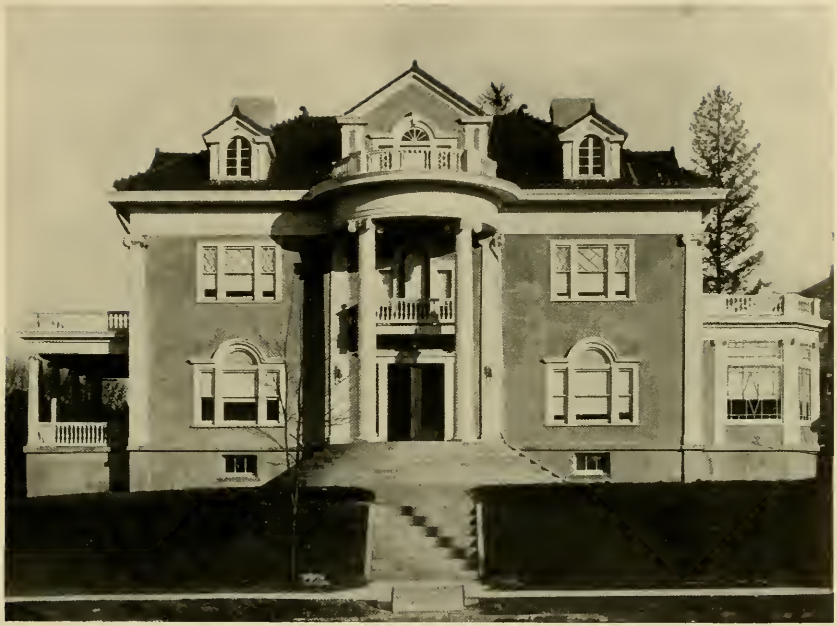


Plate 5. Residence at Mt. Vernon, N. Y. Walls of Terra Cotta Hollow Tile with cement stucco finish. S. A. Guttenberg, Mount Vernon, N. Y., Architect.

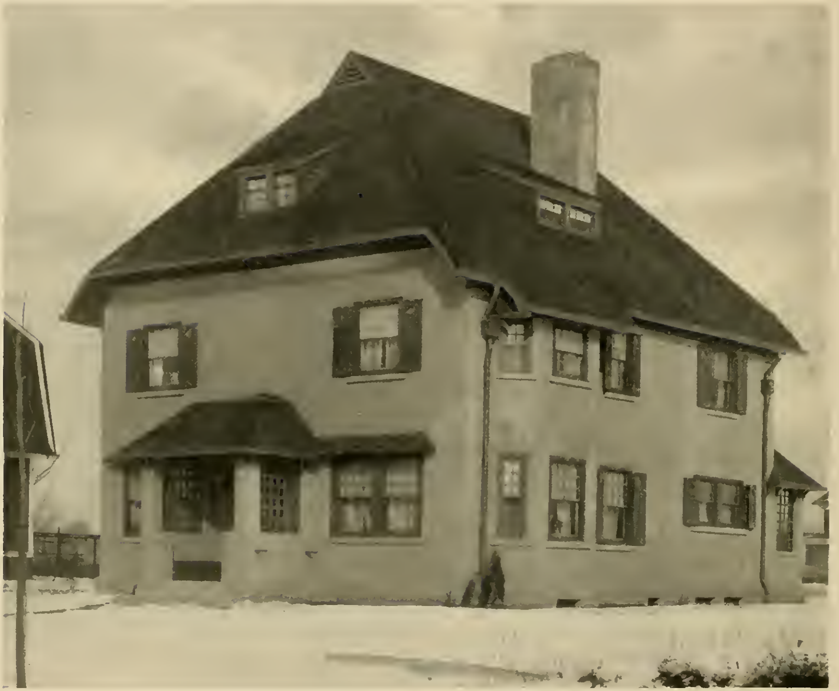


Plate 6. Residence at Plainfield, N. J. Squires and Wynkoop, New York, Architects. This building is constructed throughout of Terra Cotta Hollow Tile and is absolutely fireproof excepting the roof which is wood.

See letter on page 91 giving details of construction and cost.

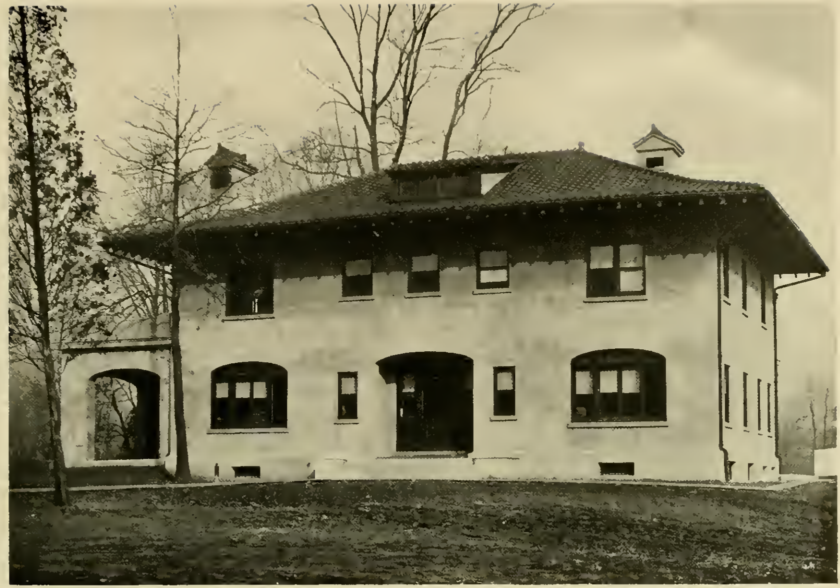


Plate 7. Residence at Englewood, N. J. Delano and Aldrich, New York, Architects. A thoroughly fireproof building; Terra Cotta Hollow Tile being used in its construction throughout.

Plate 8. A fireproof residence at Cobourg, Canada. Rutan and Russel, Pittsburgh, Architects. The floors of this building are of the Johnson System of Terra Cotta Hollow Tile as detailed on page 74, and are carried on Hollow Tile partitions throughout.

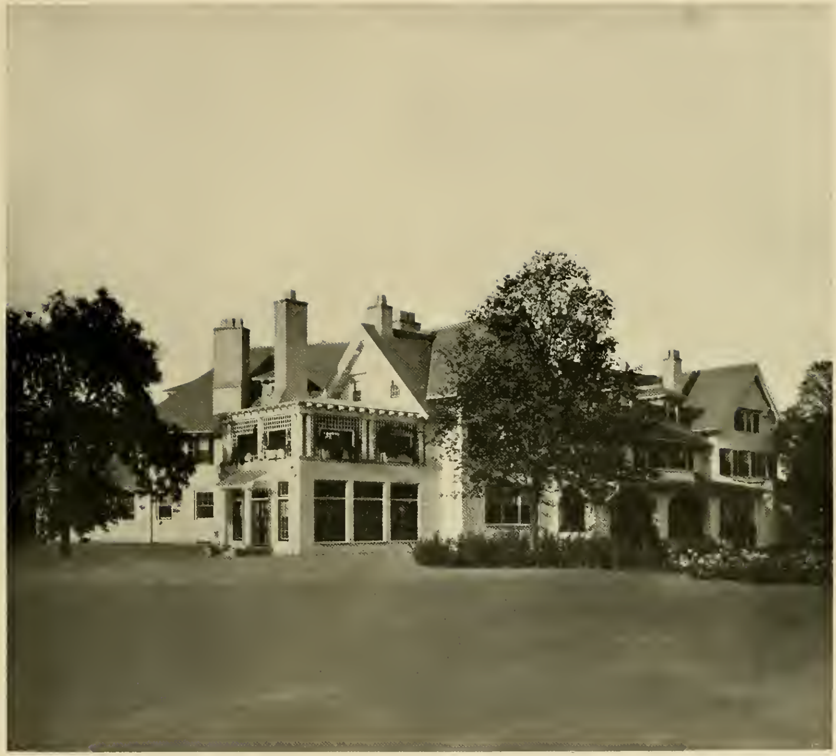


Plate 9. Another view of building at Cobourg, Canada.

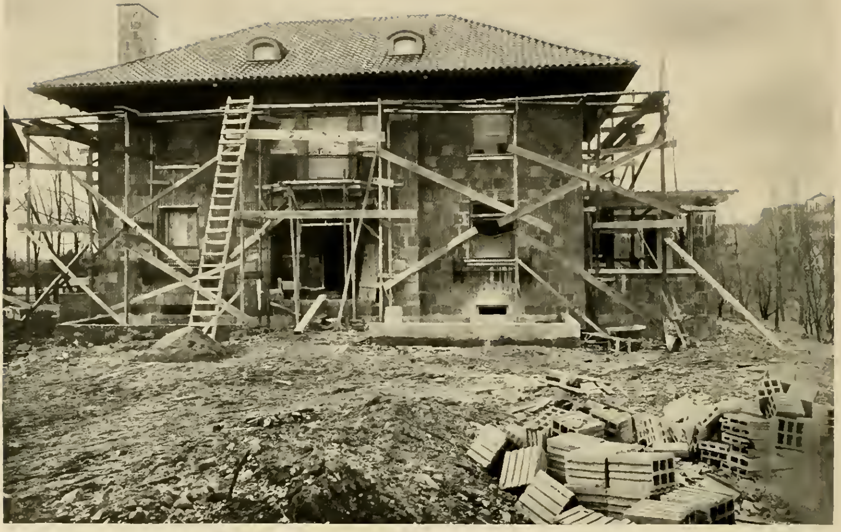


Plate 10. Exterior view during construction of house of Mr. W. Leslie Walker, New York, Architect. Note Mr. Walker's letter on page 84. This building is fireproof throughout, the walls and floors being constructed of Terra Cotta Hollow Tile and the roof of Ornamental Tile and wood as shown.

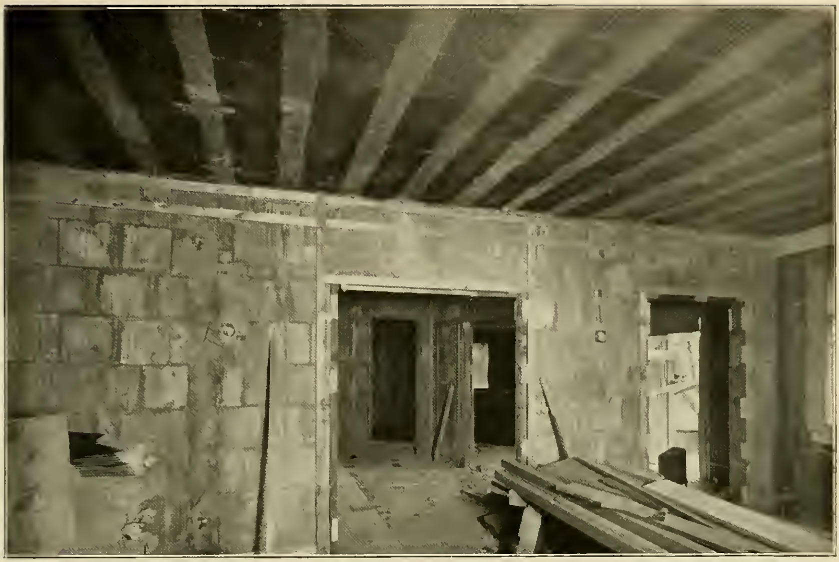


Plate 11. Interior during construction of Mr. W. Leslie Walker's house, showing fireproof floors and partitions.

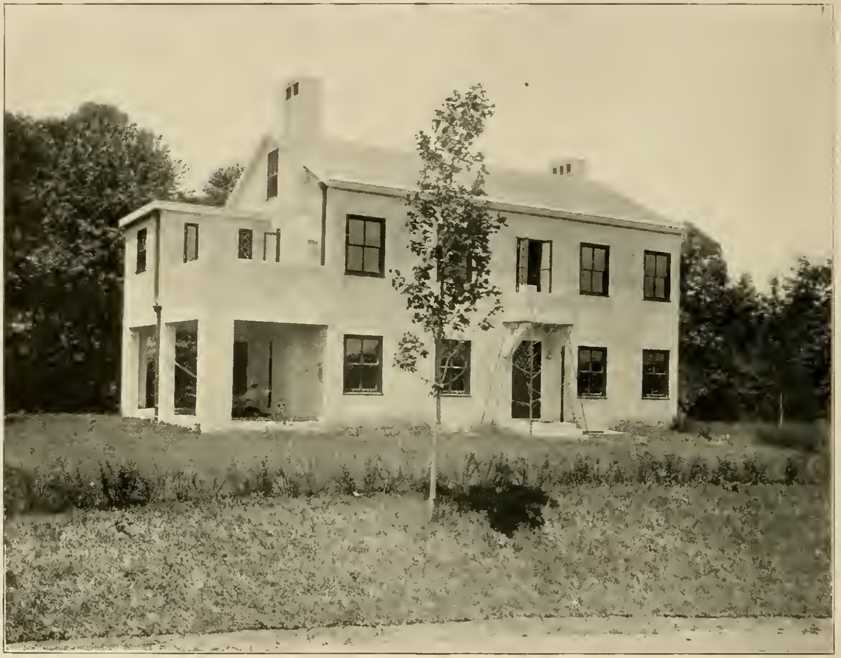


Plate 12. Finished building at Briarcliff Manor, N. Y.

Plates 12 and 13 show two views of a residence at Briarcliff Manor, New York, designed by R. W. Gardner, New York, Architect. This building is an exceptionally good type of a thoroughly fireproof residence of moderate size and cost.

This house has 11 rooms including attic rooms. The building is 25 feet wide by 36 feet long.

The walls are of Terra Cotta Hollow Tile as shown, and are finished on the outside with a coat of cement. The floors and roof are of reinforced Terra Cotta Hollow Tile and the construction in general is similar to the buildings shown in the preceeding pages.

Even the stair treads are of fireproof Terra Cotta Hollow Tile, each tread being composed of several Hollow Tile blocks formed into one solid block by embedding reinforced concrete in the hollow spaces of the blocks.

In connection with the question of cost of fireproof houses as compared with the cost of brick and wood, all frame, or concrete and wood, it is interesting to note that bids were taken for this building in various types of construction and that the lowest figures were, for all frame $6,000, for concrete walls with wooden floors, $6,600, and for Terra Cotta Hollow Tile throughout (as finally built)$6,500.

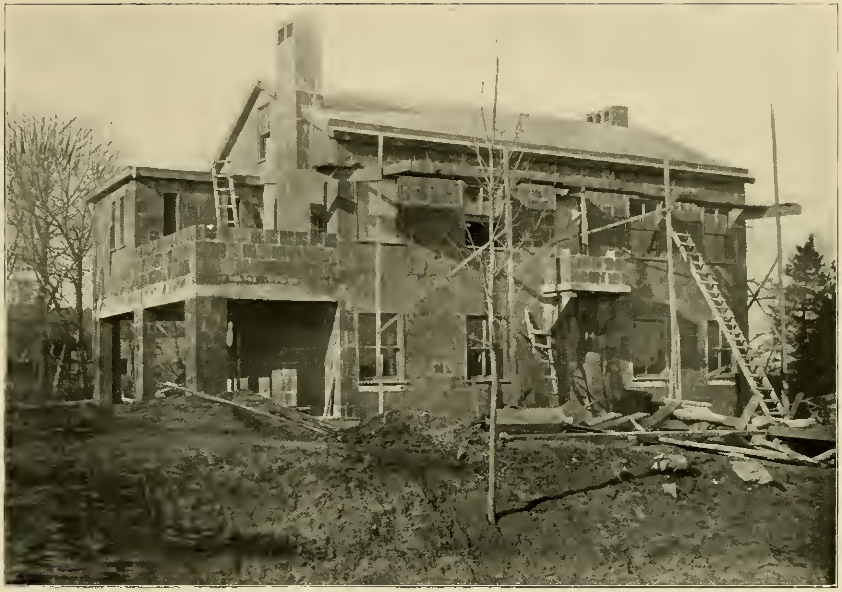


Plate 13. Illustration of Terra Cotta Hollow Tile walls during construction. Briarcliff Manor house.

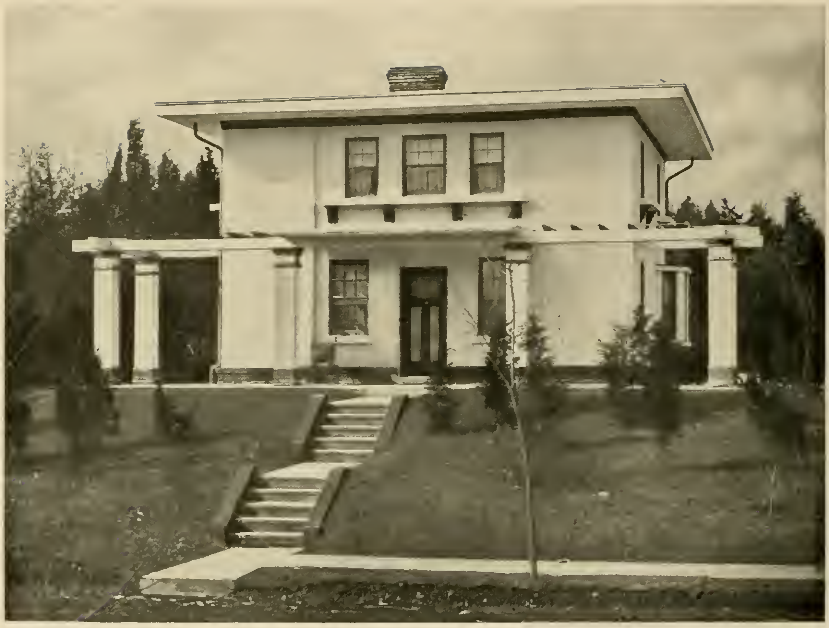


Plate 14. A Hollow Tile residence at Caldwell, N. J. Upjohn & Conable, New York, Architects. This building is fire-proof throughout. Its cost complete, including contractor's profit, was $4500.00.

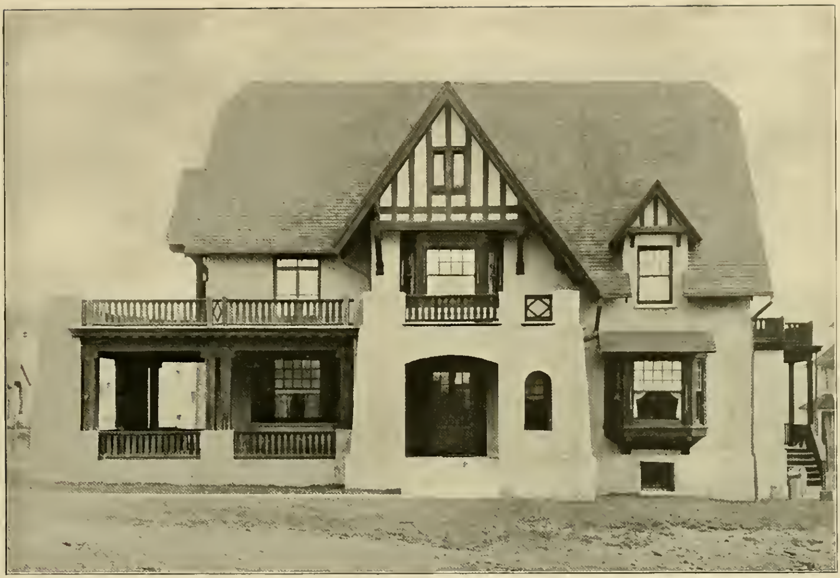


Plate 15. A residence in New York City. Squires & Wynkoop, N. Y., Architects. Eleven rooms and three bath rooms. Walls and floors of Terra Cotta Hollow Tile. Walls finished with cement stucco.

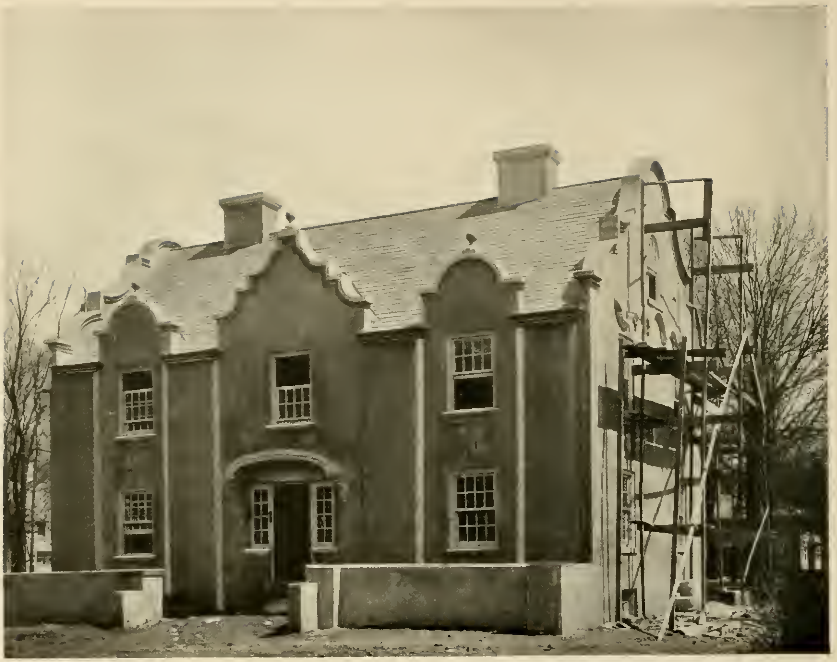


Plate 16. Residence at Mountain Station, N. J. Rossiter and Wright, New York, Architects. Walls, floors and partitions of Hollow Tile, roof of fire-proof shingles and wood.

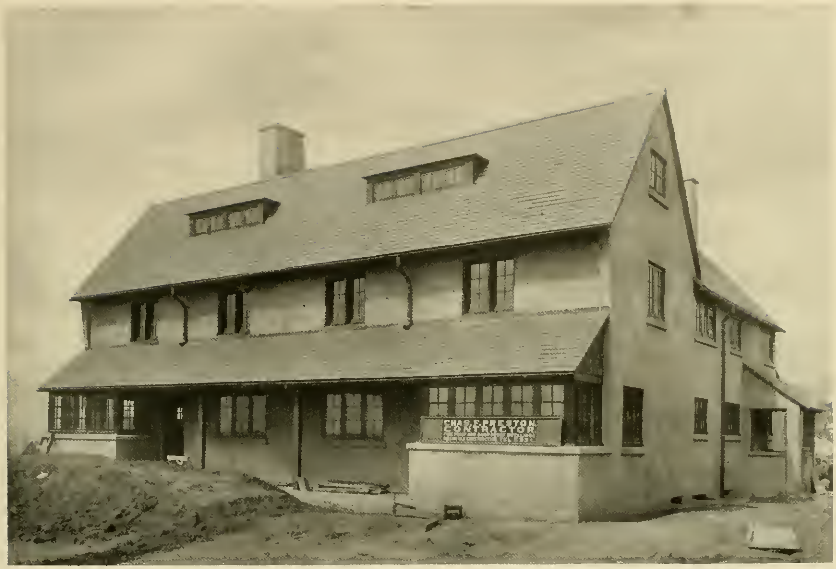


Plate 17. Residence at Bogota, N. J. Constructed of Terra Cotta Hollow Tile throughout. A thoroughly fireproof building. Squires and Wynkoop, New York, Architects.

This building is an exact reproduction of an old English farmhouse. To get the beamed ceiling effect required by the owner for the living room, the concrete beams in the ceiling were carried down three inches below the hollow tile with satisfactory results.

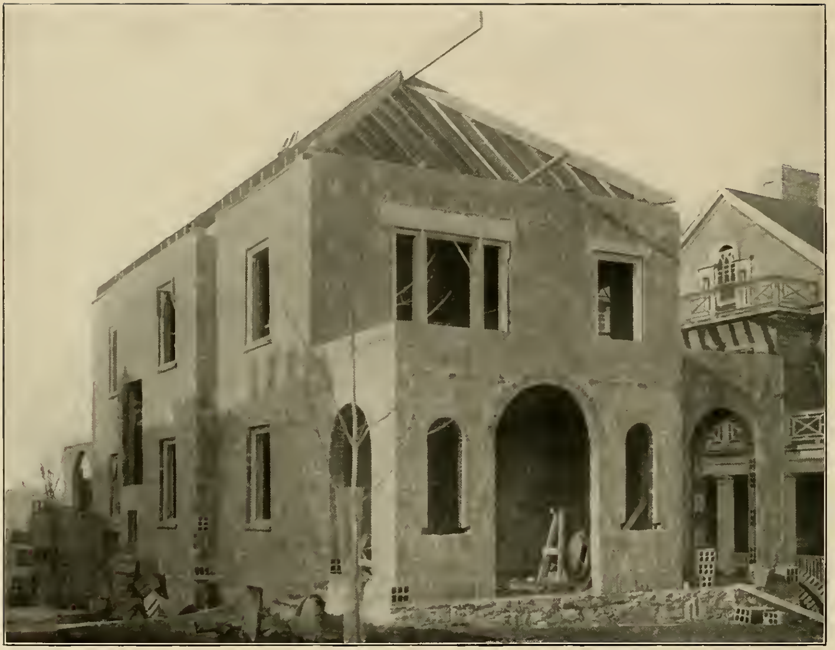


Plate 18. Another residence in New York City, view during construction. Squires & Wynkoop, N. Y., architects. Twelve rooms and two bath rooms. Walls and floors of Fireproof Terra Cotta Hollow Tile.

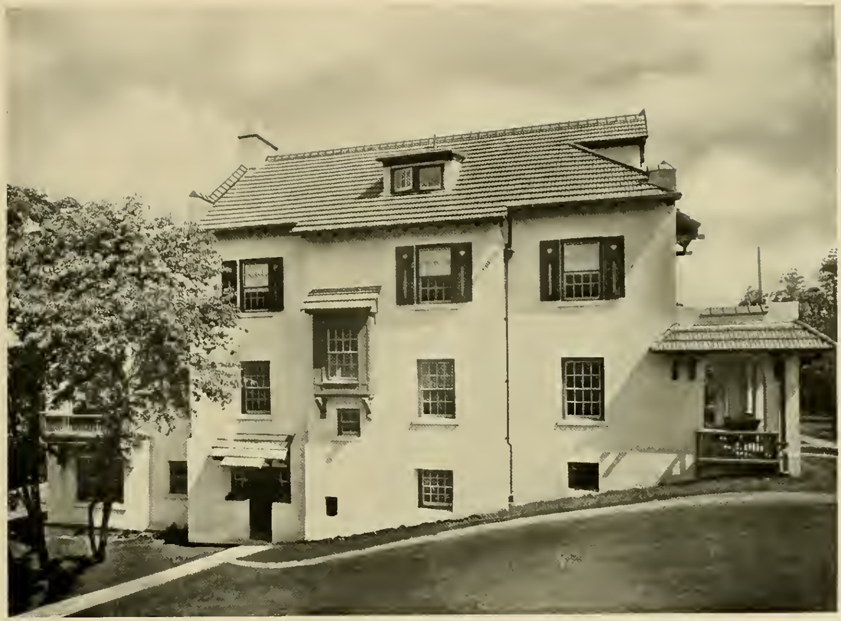


Plate 19. A side view of the house, finished, which is shown under construction in plate 18.

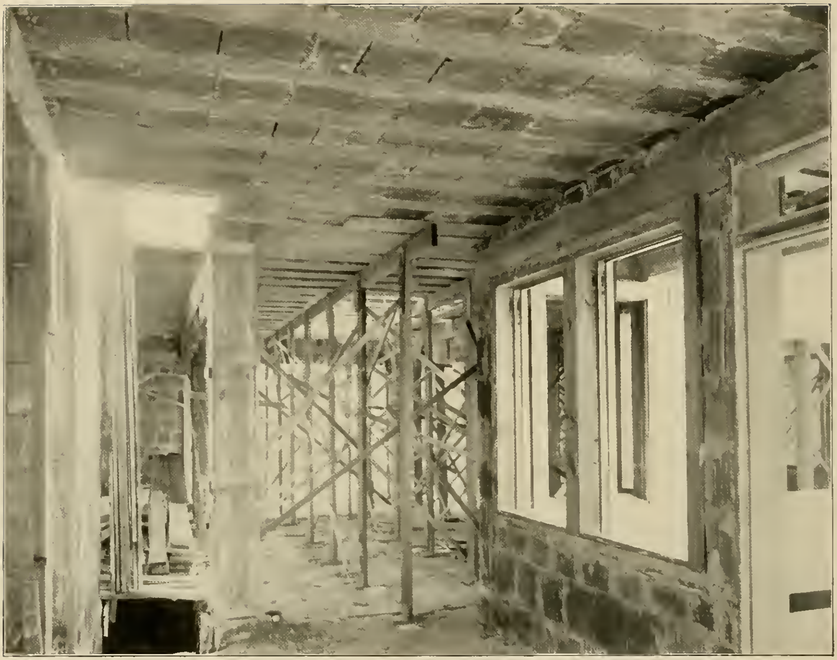


Plate 20. Illustration of typical floor and wall construction, showing lintels for windows and portion of wood centering, or false work, supporting new laid floor.

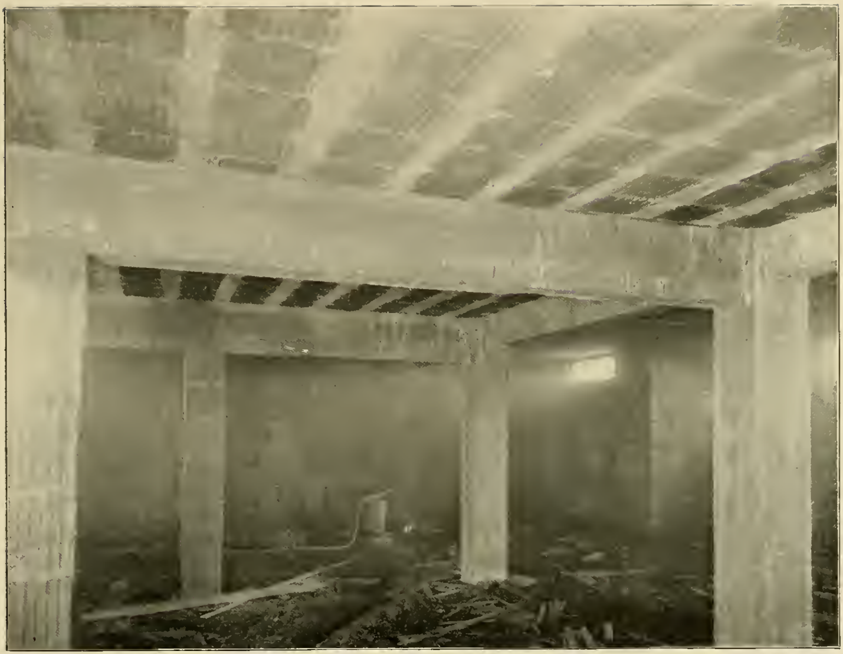


Plate 21. View in cellar of a large residence building, showing floor construction carried on columns and girders of reinforced concrete and intermediate columns of Terra Cotta Hollow Tile.

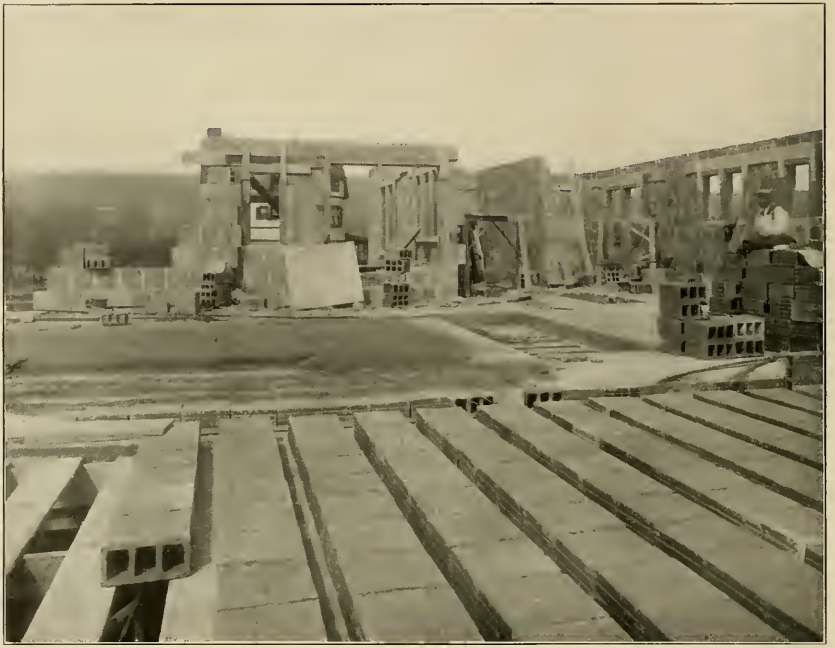


Plate 22. View, during construction, of Terra Cotta Hollow Tile Fireproof walls and floors. Note how floor tiles are laid preparatory to placing alternate concrete joists.

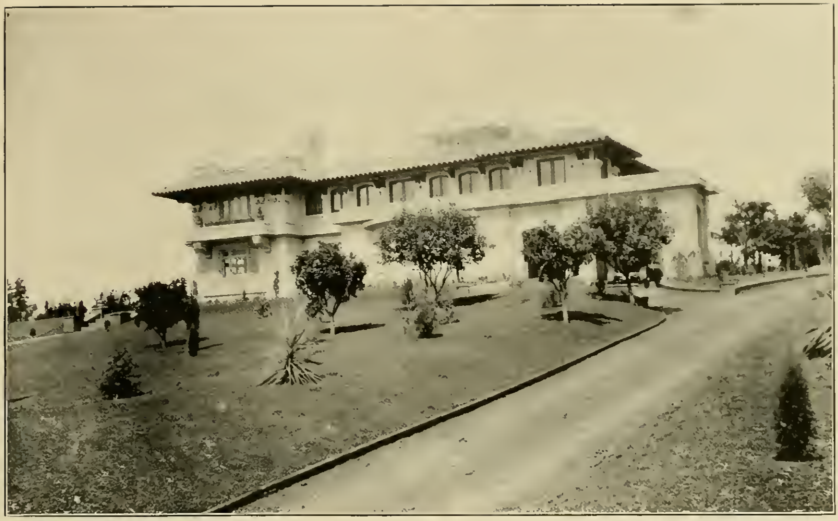


Plate 23. View of finished building—Los Angeles.

The house illustrated in Plates 23, 24, and 25, was designed for his own use by E. C. Bergstrom, Architect, Los Angeles, California.

The construction of the exterior walls is, in general, the same as buildings previously illustrated, except that double 6-inch and double 4-inch Hollow Tile were used, instead of single blocks.

The floor and roof construction of this building is also different from the previous houses shown, in that it is the Johnson (Patent) System of Reinforced Hollow Tile, which is controlled by the National Fire Proofing Company. Detail of the Johnson system is shown on page 74.

The Johnson floor and roof in this building was carried on reinforced concrete girders which rested on the exterior walls and the interior partitions. Partitions were of 4-inch Terra Cotta Hollow Tile. The spans of the floors and roof from girder to girder, ranged from 16 to 20 feet.

The roof was flat and finished with eaves of Mission tiles, as shown in illustrations. These eaves were carried on a wooden frame supported by and tied to the cornice brackets, as shown in detail on page 29.

No steel was used for construction except as a reinforcing tension material. The exterior walls were coated with cement and fine gravel and treated with acid, which removes part of the cement and leaves the gravel visible, making a very attractive finish.

This house contains 16 rooms.

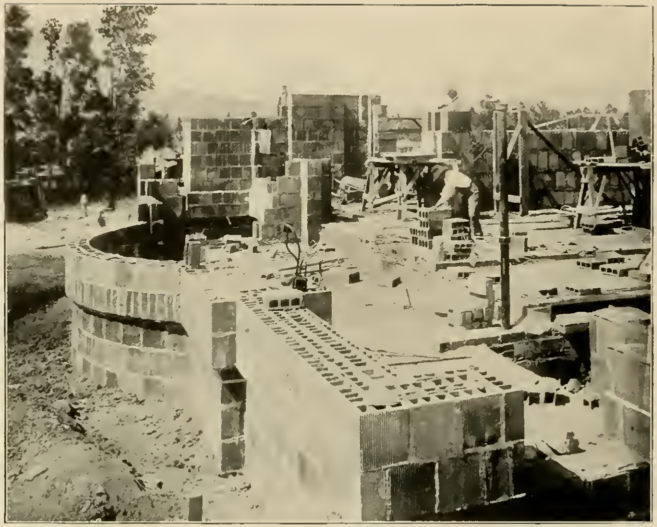


Plate 24.

Illustrating wall and floor construction of house at Los Angeles.

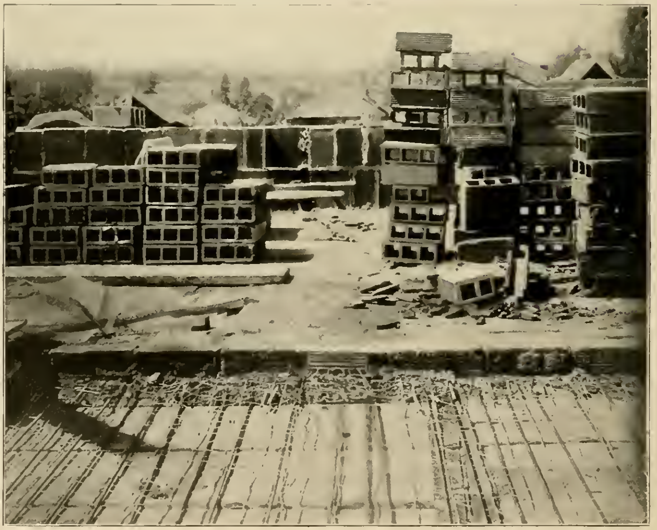


Plate 25.

View, during construction, of house at Los Angeles, showing method of laying Johnson Floor.

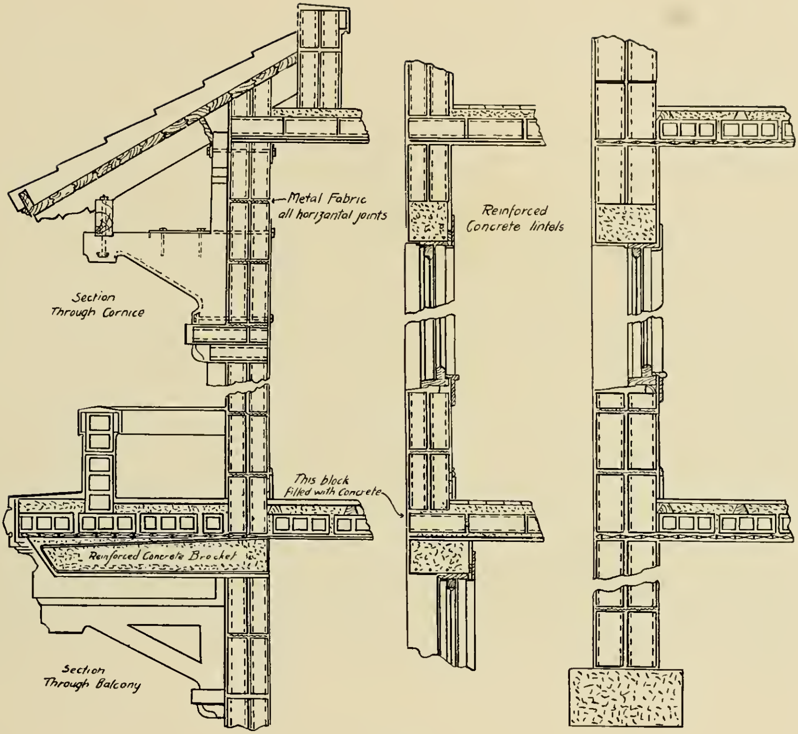

Metal Fabric all horizontal joints
Reinforced Concrete lintels
Section Through Cornice
This block filled with Concrete
Reinforced Concrete Bracket
Section Through Balcony

Figure 1

Construction details of the house at Los Angeles shown on page 27.

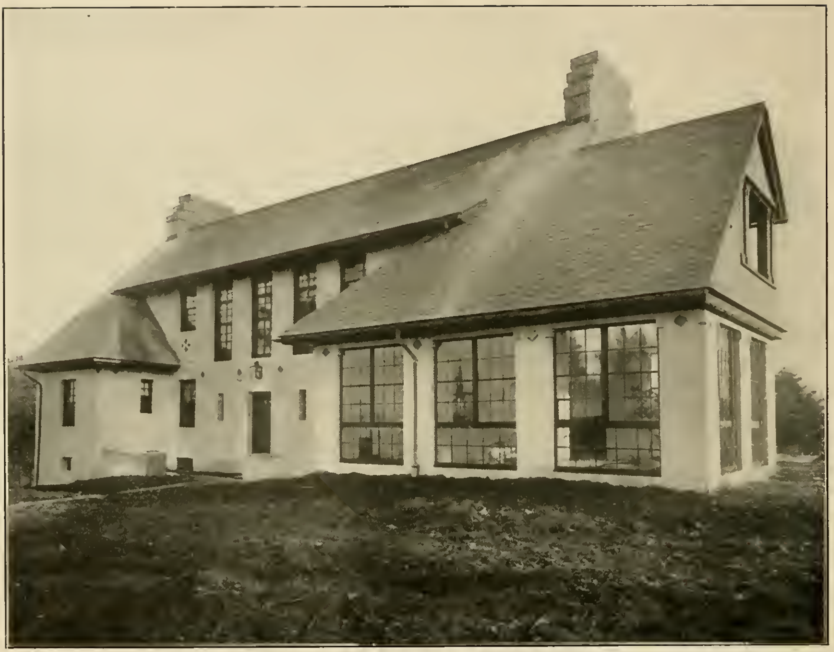


Plate 26. Residence at Canton, Mass., Maginnis, Walsh & Sullivan, Boston, Architects. The walls only of this building are of Terra Cotta Hollow Tile, the floors and roof being wood. The owner stated that the cost of the completed house was about the same as if the walls had been of wood and painted.

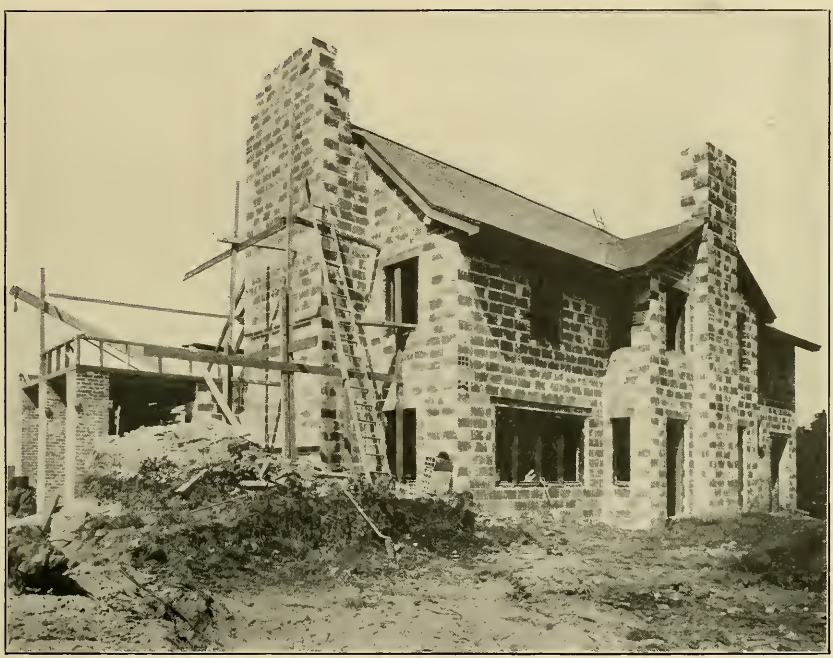


Plate 27. Canton, Mass., residence during construction, showing use of Terra Cotta Hollow Tile in walls.

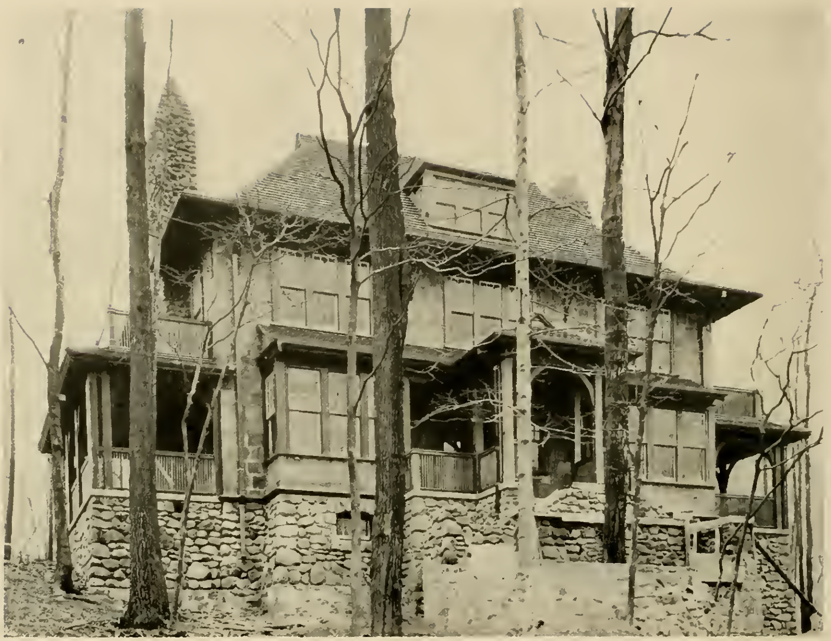


Plate 28. Jamaica, Long Island residence designed and owned by Albert Thompson, Architect, New York. A strictly fireproof building of Terra Cotta Hollow Tile throughout.

The photograph shows the building complete except the stucco finish which is still to be applied.

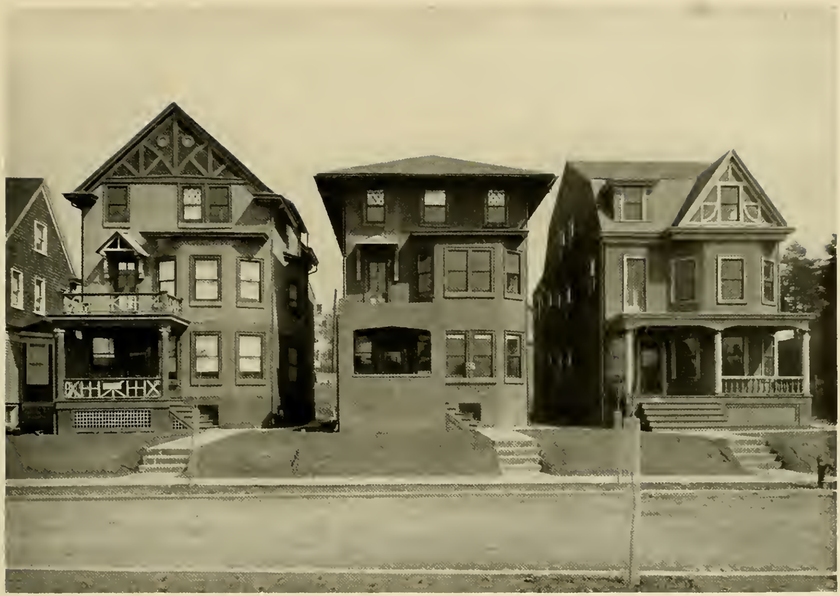


Plate 29. Three houses at East Orange, N. J., designed and built by the owner. The walls in these buildings are of Terra Cotta Hollow Tile, floors of wood and roofs of slate.

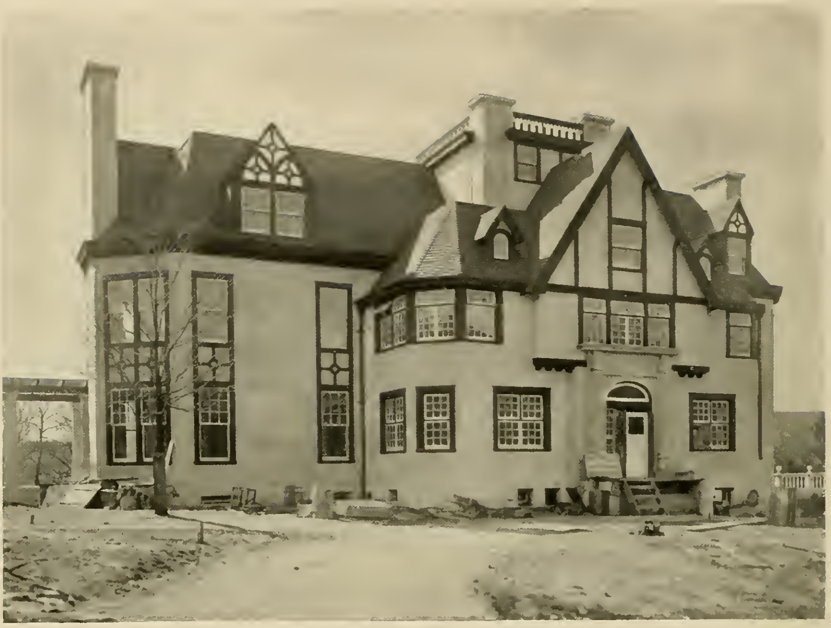


Plate 30. Residence at Tuxedo Park, N. Y., of Mr. Charles W. Clinton of Clinton and Russel, Architects, New York. First story walls are of Terra Cotta Hollow Tile, floors and roof are of wood. Mr. Clinton's stable is also constructed of Terra Cotta Hollow Tile.

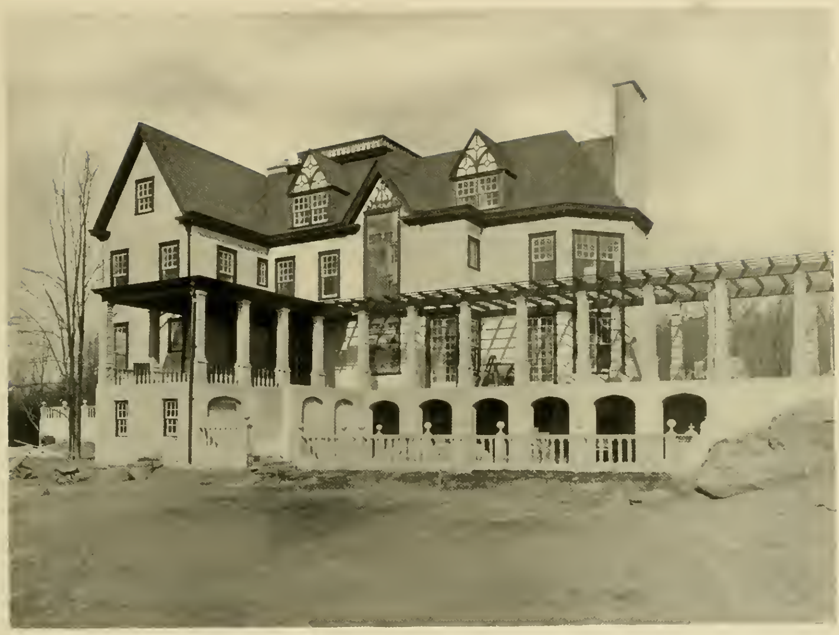


Plate 31. Another view of Mr. Clinton's house, showing veranda and pergola constructed of Terra Cotta Hollow Tile.

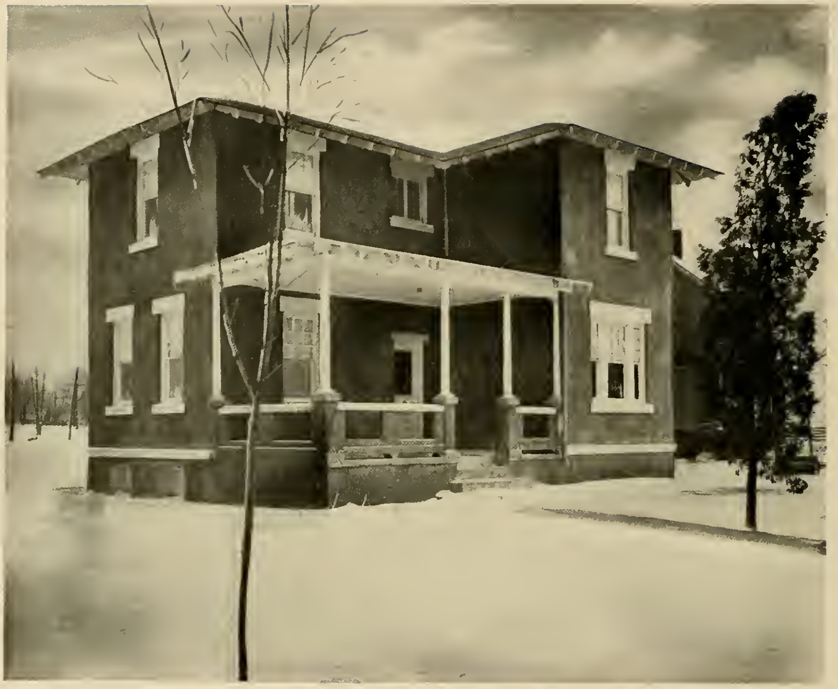


Plate 32. Residence at New Brunswick, N. J. Designed and built by Frederick Dolt, walls of Terra Cotta Hollow Tile, Floors and Roof of Wood. See on page 83, Mr. Dolt's letter regarding this building.

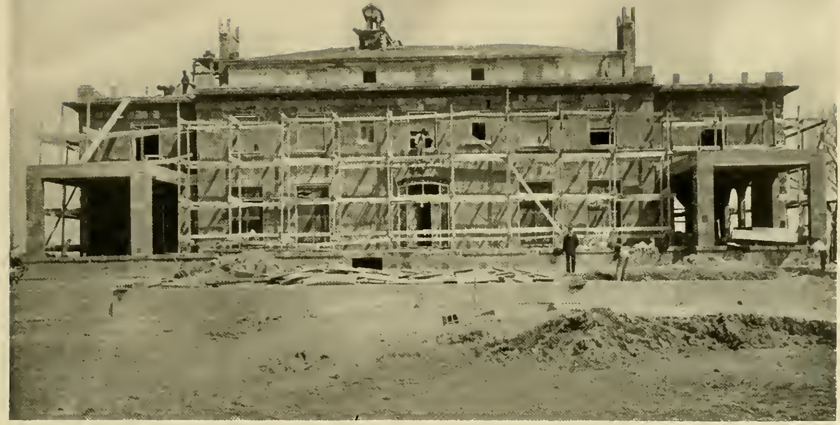


Plate 33. A large residence in course of construction at Sands Point, Long Island, N. Y. Foster, Gade and Graham, New York, Architects. A fireproof building throughout, walls constructed of double Terra Cotta Hollow Tile.

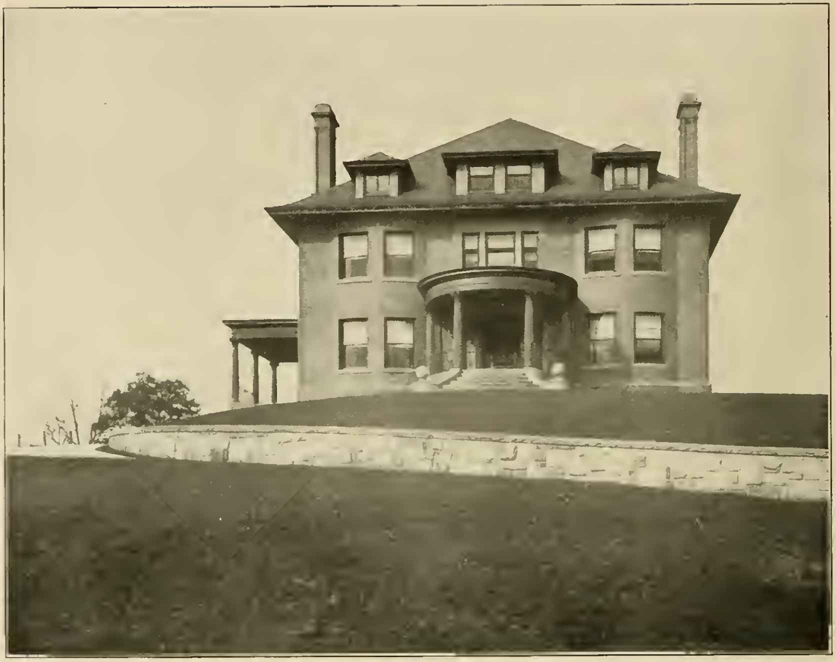


Plate 34. Residence at Pittsburgh, Penn. J. Lewis Beatty, Pittsburgh, architect.

The above illustration shows another type of a modern fireproof dwelling. The exterior walls of this building were made extra thick to admit of the enclosing of heat radiators, and were constructed of one course of face brick, backed up with one course of common brick and 8 inches of hollow tile. For ordinary construction, however, the one course of face brick would be sufficient, backed up with either 8″ or 12″ blocks of hollow tile, the two bonded together by means of wall ties, thus forming the hollow air space in the wall the same as in an entire hollow tile house. The partitions throughout are of hollow tile and the floors are constructed on the Johnson (Patent) System of reinforced hollow tile (detail of which is shown on page 74).

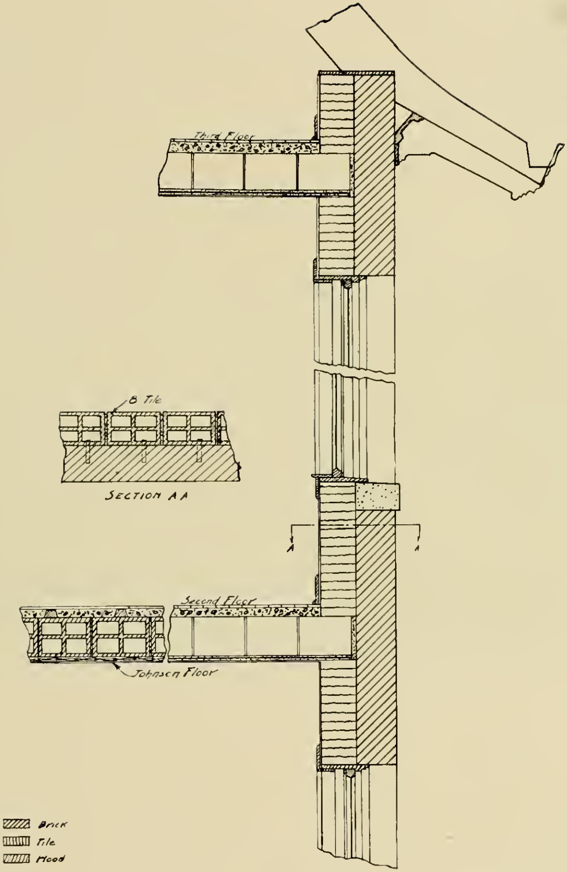


Figure 2. Construction details of the residence illustrated on page 38.

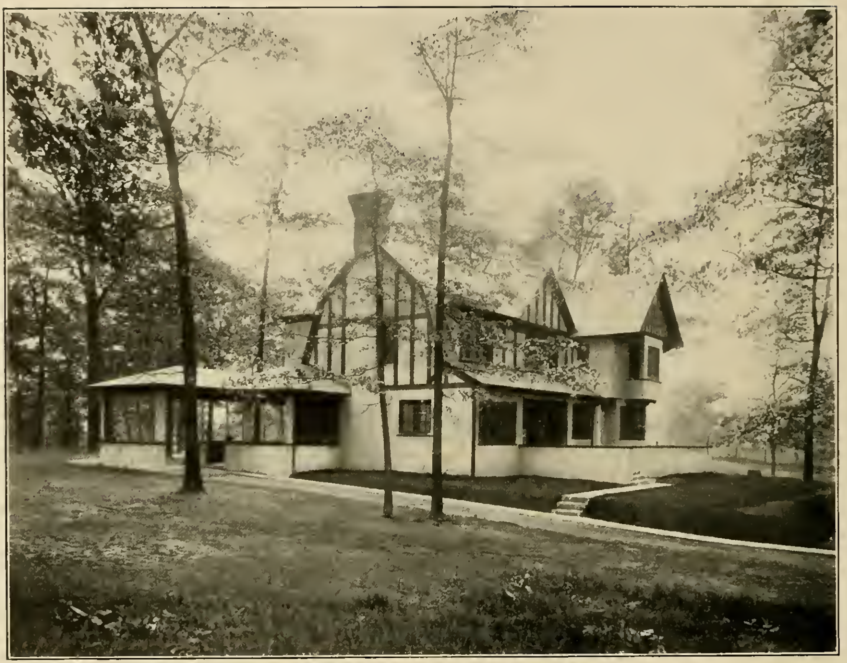


Plate 35. View of completed residence at Oakmont, Pennsylvania.
Carpenter & Crocker, Pittsburgh, Pa., Architects.

Two views of this 14 room residence are shown in plates 35 and 36. The exterior walls and the chimneys are built entirely of Terra Cotta Hollow Tile, and plate No. 36 shows walls erected ready to receive the roof. The floors are constructed on the Johnson (Patent) System of reinforced Hollow Tile (detail of which is shown on page 74), and are carried on the exterior walls and interior hollow tile partitions.

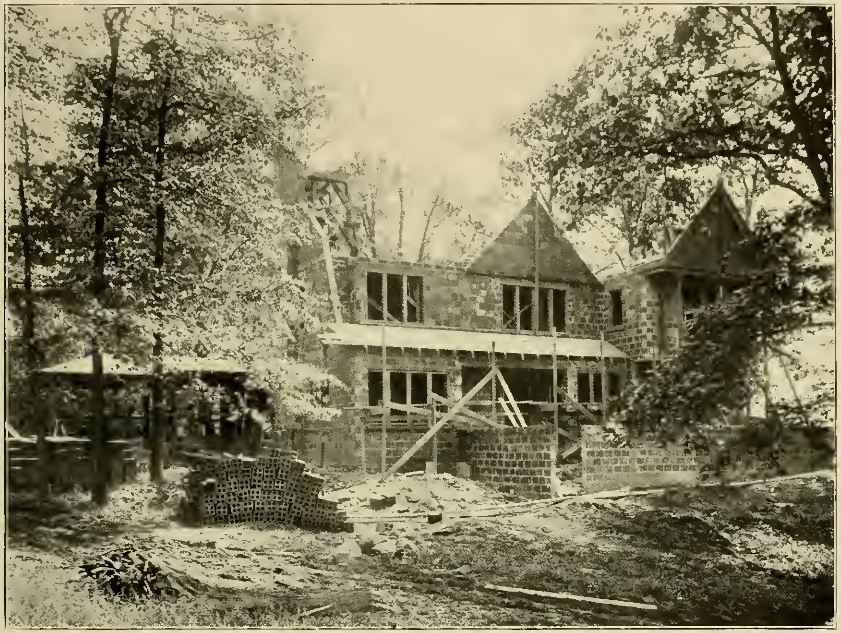


Plate 36. Residence at Oakmont, Penn., during construction.
Same building as shown on page 40.

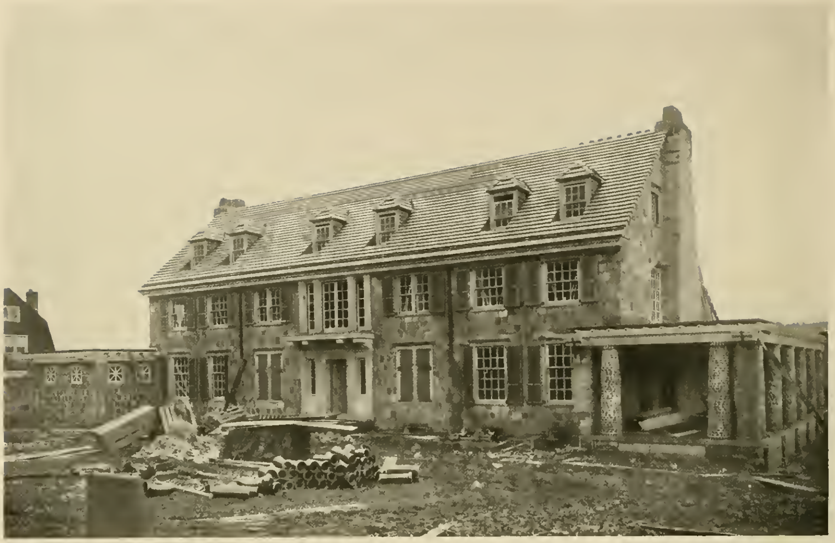


Plate 37. A residence under construction at Edgeworth, Penn. Charles Barton Keen, Philadelphia, Architect. The walls of this building are of 10 inch Terra Cotta Hollow Tile, the floors and roof are of wood.

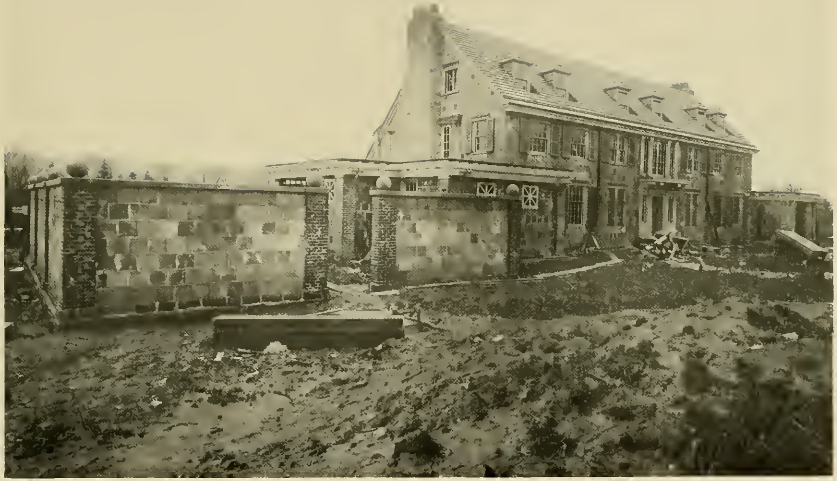


Plate 38. Another view of residence shown in Plate 37.
Note Mr. Keen's letter on page 90.

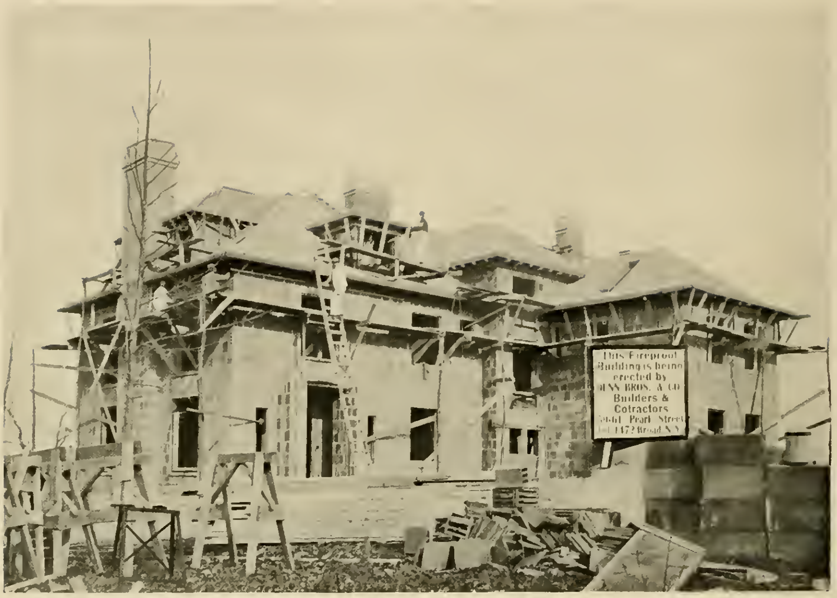


Plate 39. A residence at St. James, Long Island. Ford, Stewart and Oliver, and Lawrence S. Butler, Associate Architects, New York. This building is fireproof throughout, walls, floors, and roof being constructed of Terra Cotta Hollow Tile. See Plates 40 and 41.

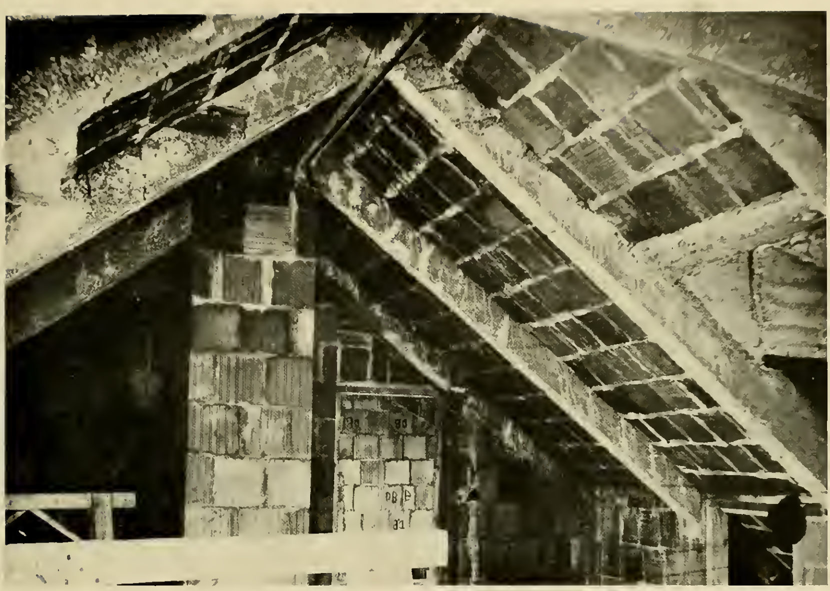


Plate 40. View of fireproof roof construction in house at St. James, L. I. shown in Plate 39. Compare with typical detail of roof construction in Figure 8, Page 70 and in Figure 11, Page 73.

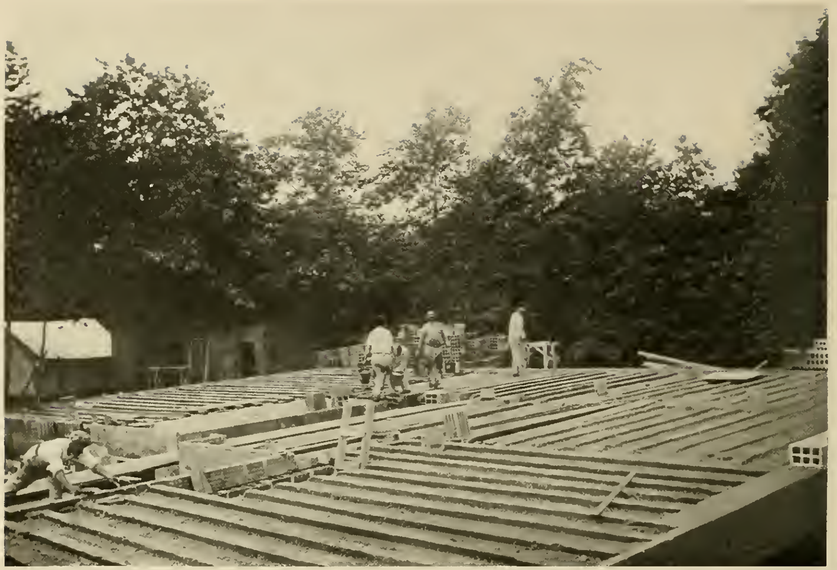


Plate 41. Laying fireproof floor in house at St. James, Long Island.

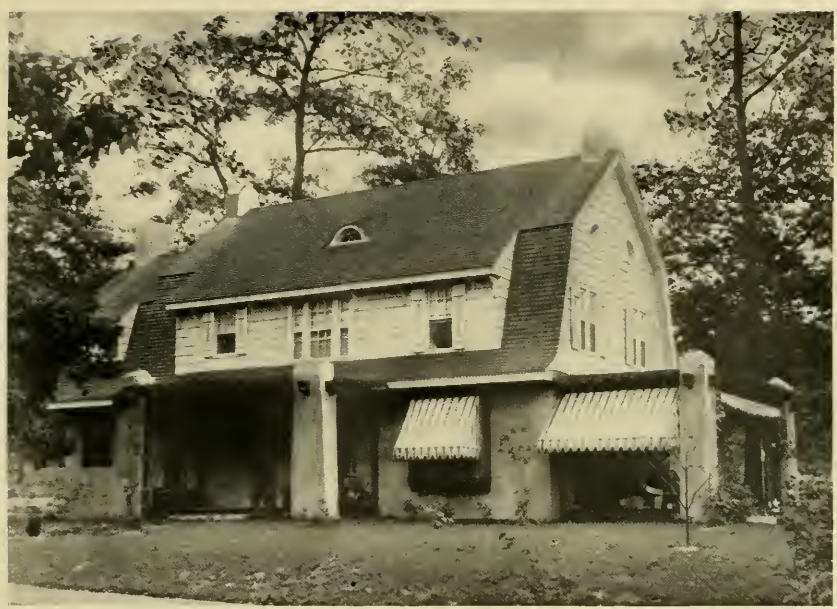


Plate 42. Residence at Englewood, N. J. Aymar Embury II, New York, Architect. The first story walls and pillars and the chimneys of this building only, are of Terra Cotta Hollow Tile.

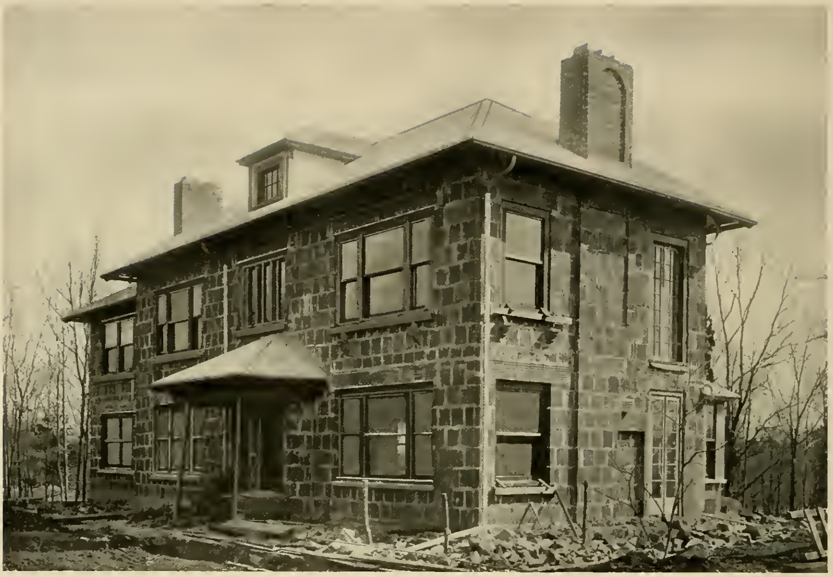


Plate 43. Residence under construction at Dedham, Mass. Frank Choteau Brown, Boston, Architect. The walls of this building are of Terra Cotta Hollow Tile as shown, the first floor is of fireproof construction, the second floor and roof are of wood.

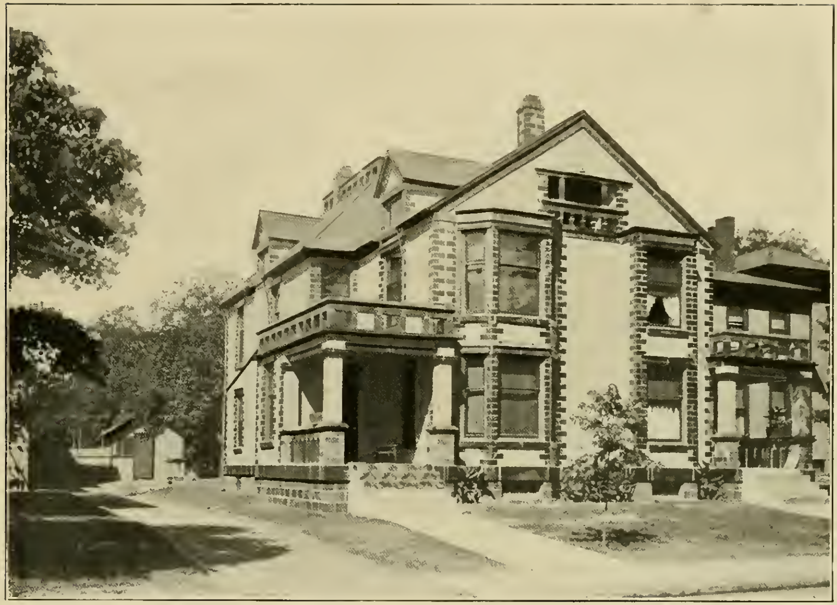


Plate 44. Residence at Akron, O. Chas. Henry & Son, Akron, architects. This plate shows an agreeable treatment of Terra Cotta Hollow Tile for exterior walls. Floors of this building are of Terra Cotta Hollow Tile laid under the Johnson (Patent) System as detailed on page 74.

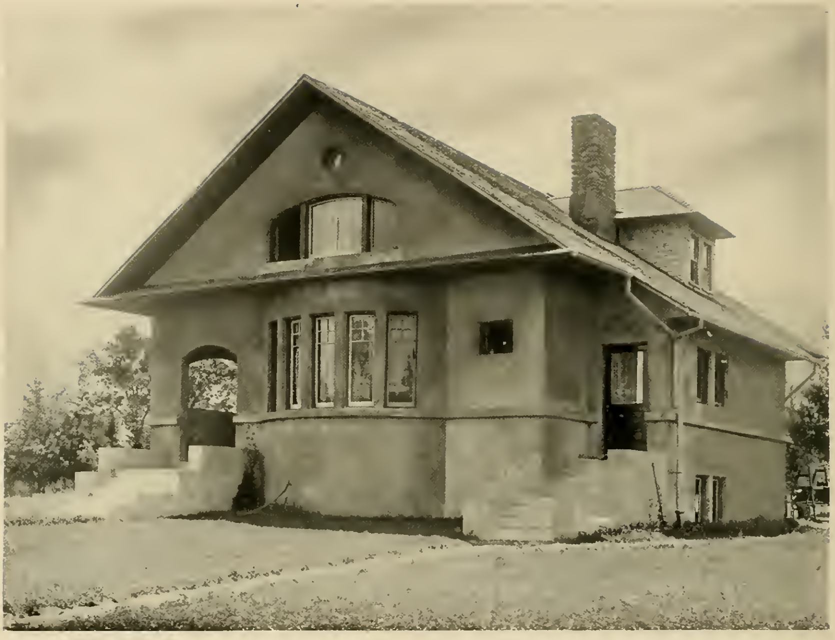


Plate 45. Residence at West Englewood, N. J. Walls of Terra Cotta Hollow Tile. Roof and floors of wood. Paul Bourgeois, Architect and owner.

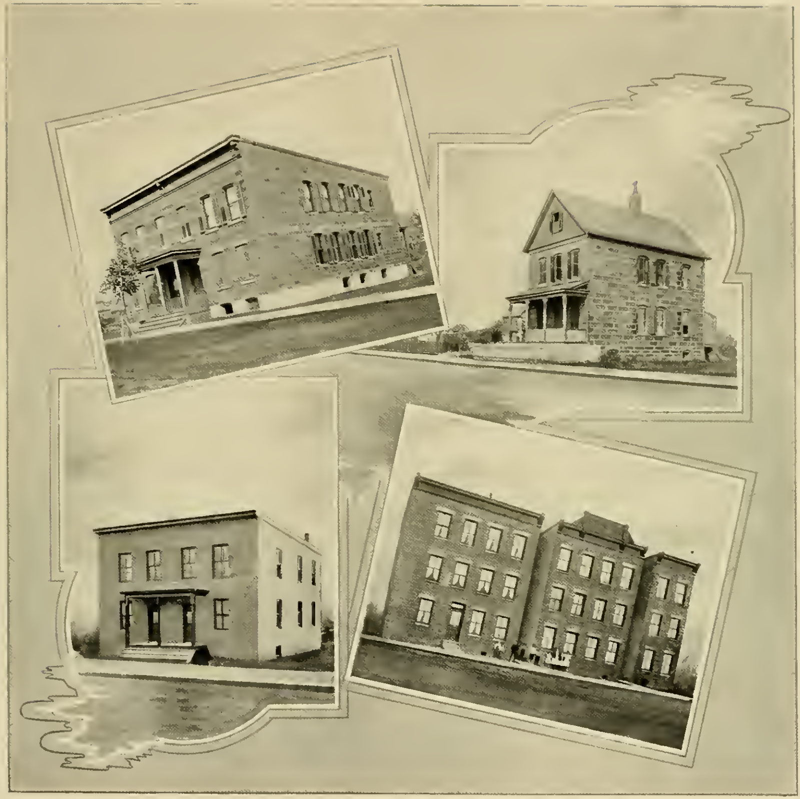


Plate 46. Types of workmen's cottages and flat buildings as frequently used in factory districts. Walls of vitrified Terra Cotta Hollow Tile building blocks, floors of wood. These buildings are warm, dry, sanitary and are very economical to build.

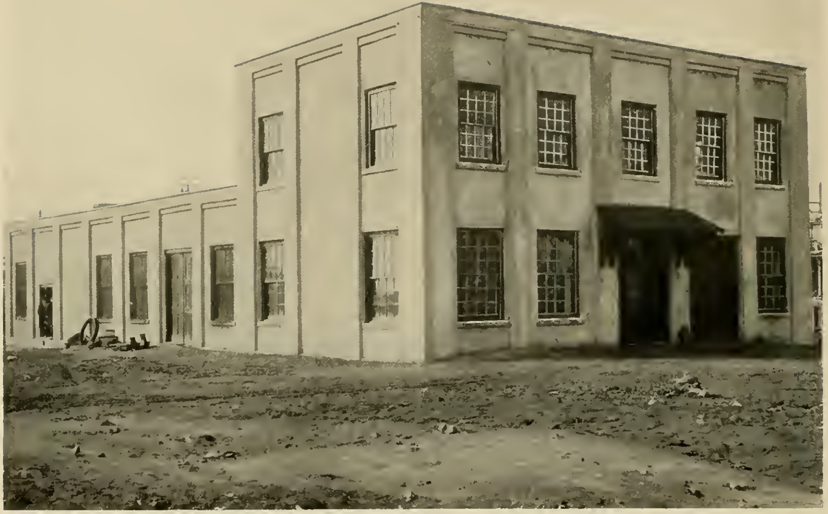


Plate 47. A factory building at Marion, N. J., of Terra Cotta Hollow Tile. Designed by Frederick Wandelt, Engineer, Jersey City. The floors in this building were designed to carry 100 lbs. live load per square foot and were tested to 500 lbs. per square foot, without deflection.

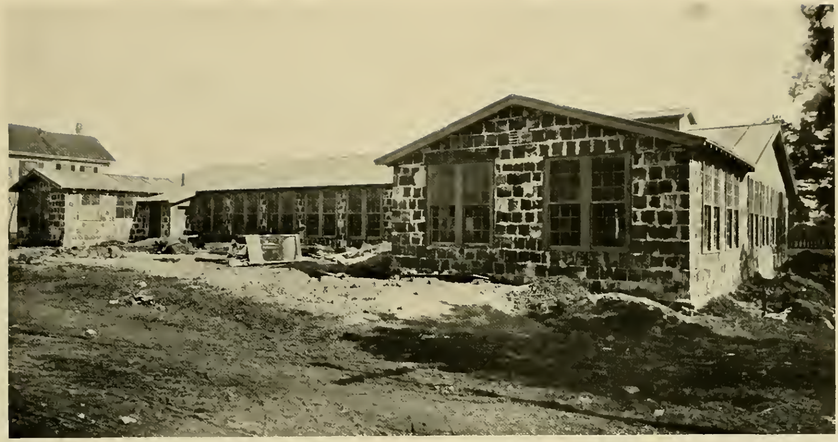


Plate 48. The factory building of the Lightning Hose Coupling Co., at Winchester, Mass. Walls of Terra Cotta Hollow Tile. Cement stucco finish still to be applied. Construction designed by the Lightning Hose Coupling Company's engineers.

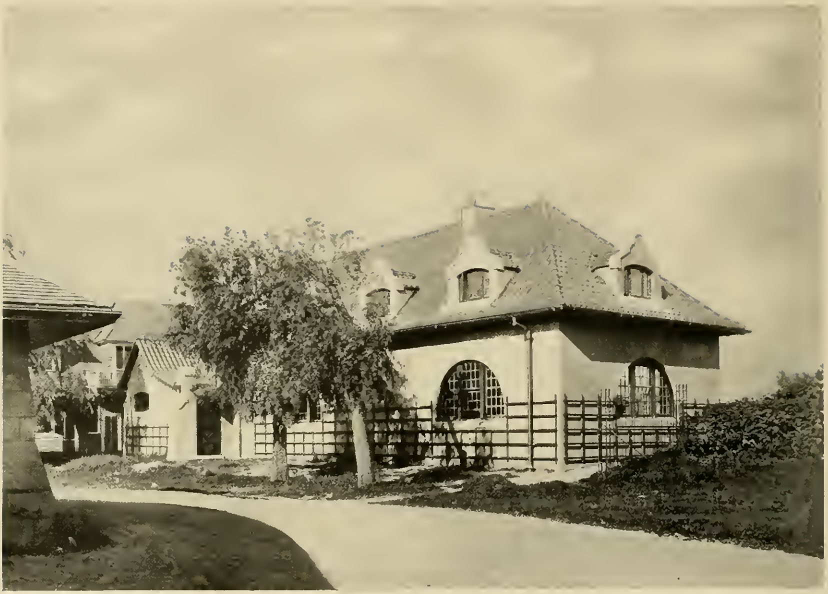


Plate 49. Stable at Monmouth Beach, N. J. Ford, Stewart & Oliver, New York, Architects.

This building is constructed of Terra Cotta Hollow Tile throughout, walls 8 inches thick, second floor 6 inches thick. Ground was broken for this work on May 9th and building was occupied on July 3d. Cubical cost 22½ cents per cubic foot.

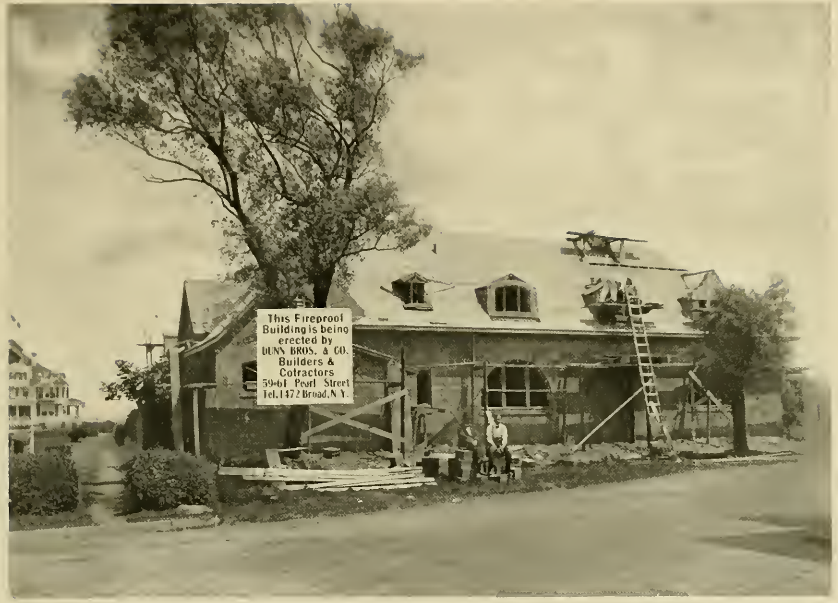


Plate 50. Illustration during construction of Stable shown in Plate 49.

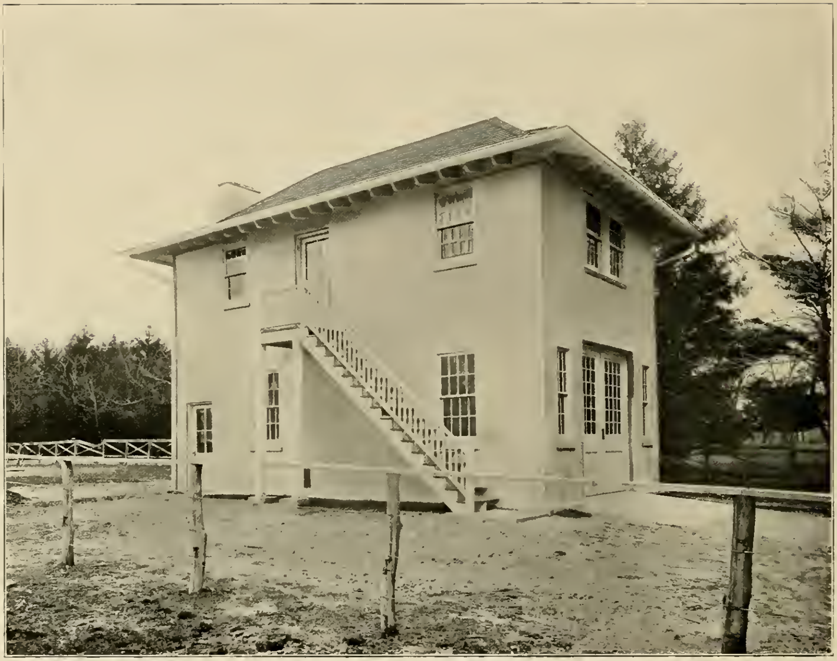


Plate 51. Automobile garage at Westchester, N. Y. Thornton Chard, New York, Architect. First floor for storage of cars and equipment; second floor for chauffeur's living apartments. Plate shows exterior of finished building.

Walls are of fireproof Terra Cotta Hollow Tile finished on outside with cement coating.

Floors are of fireproof Terra Cotta Hollow Tile with reinforced concrete joists as in buildings previously shown.

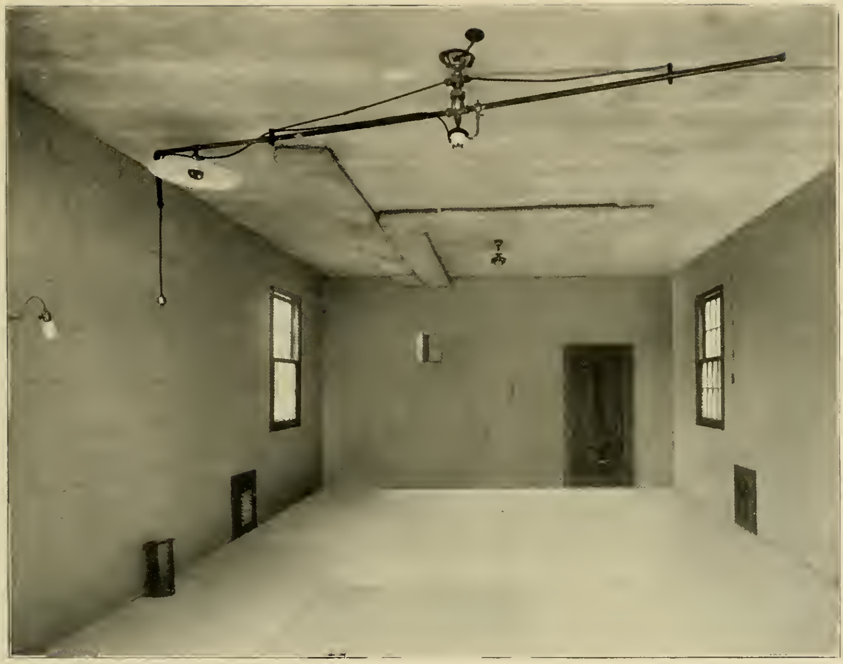


Plate 52. Interior view of first floor of garage at Westchester. The Hollow Tile construction of walls and ceiling may be seen through coating of paint.

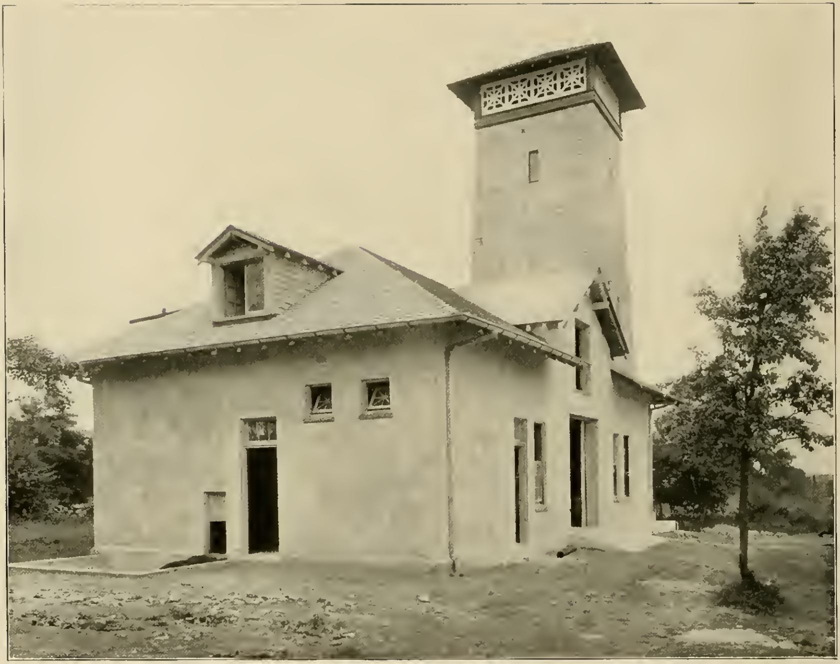


Plate 53. View of stable on a country estate in New York. Terra Cotta Hollow Tile walls with cement finish.

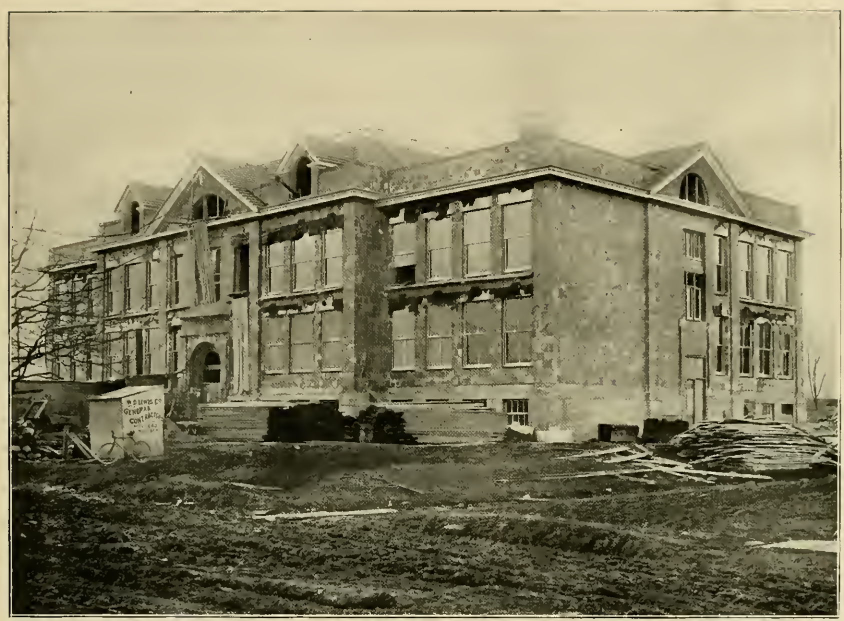


Plate 54. A school building at Roselle Park, N. J. Dimensions 125 by 68 feet. Pierce and Bickford, Elmira, N. Y. Architects. This building is fireproof throughout, walls, floors, stairs and stair landings; everything except the roof timbers which are wood. The total contract price for constructing this building complete was $65,000 and this was estimated to be less than the cost if built with brick walls and wooden floors.

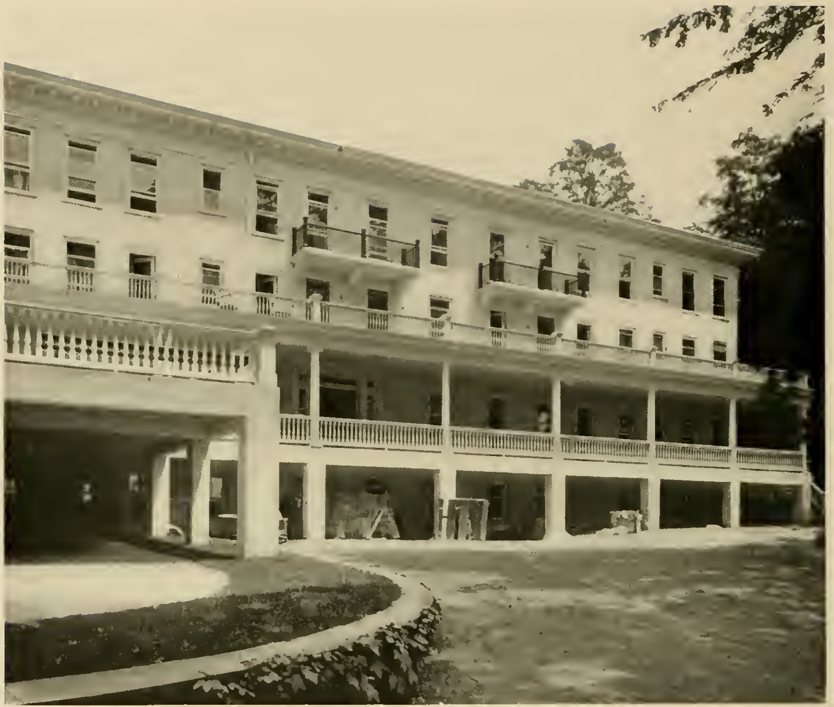


Plate 55. A hotel building at Glen Cove, Long Island. Crute & Weck, Brooklyn, N. Y., Architects. Frederick Wandelt, Jersey City, N. J. Engineer.

This is a four story building, strictly fireproof throughout, the walls being of 8 inch Terra Cotta Hollow Tile: the floors of reinforced Hollow Tile similar to detail on page 66 and the porches of this same construction: the stairs of reinforced concrete; the balconies of cast concrete reinforced and the roof is the same as the floor construction and is supported on reinforced concrete girders. All partitions of Terra Cotta Hollow Tile.

This building was originally figured for frame construction, but fireproof construction as detailed above was finally adopted. By adopting the fireproof construction there was secured a saving in insurance premiums alone amounting to $500.00 per year. This saving will in itself in a few years cover the entire difference in cost between frame and fire-proof construction.

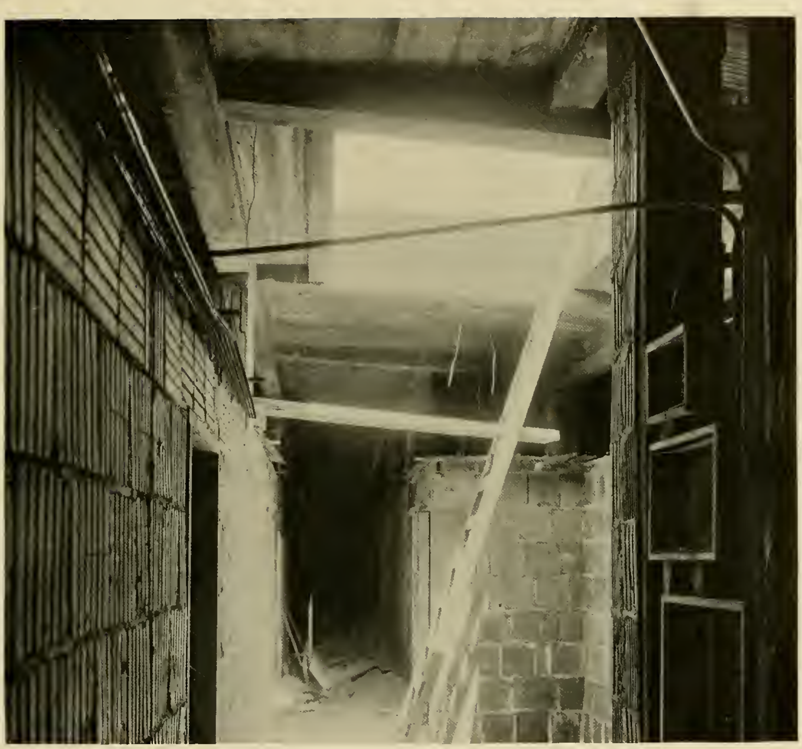


Plate 56. Interior view of construction of Glen Cove Hotel, showing fireproof partitions, floors, and roof.

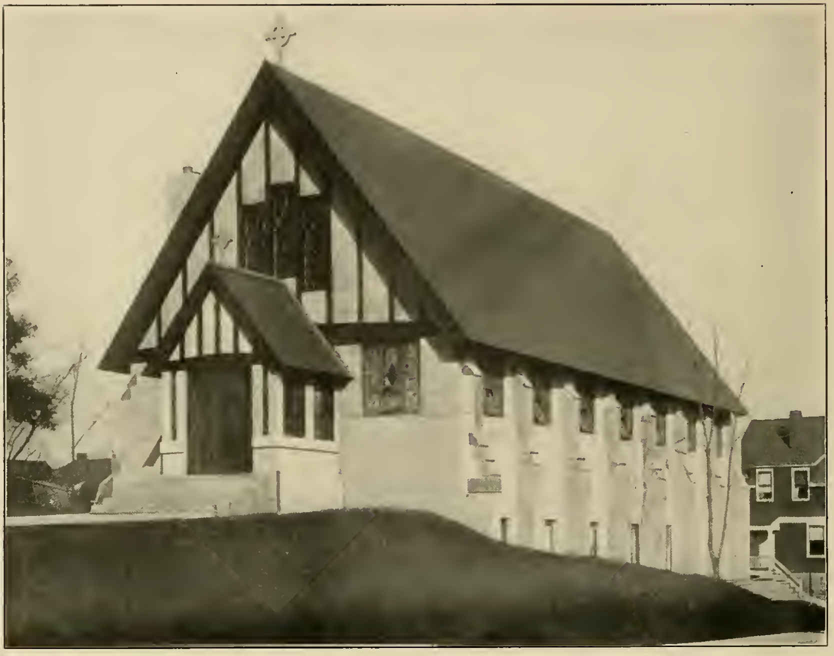


Plate 57. Church at West Orange, N. J. H. B. Upjohn, New York, Architect. Walls of Terra Cotta Hollow Tile. Basement walls 12 inches thick, upper walls 8 inches thick. Entire wall surface coated with cement stucco. Floors and roof of wood. Bids for this building were less than bids for the same building with brick walls. Buttresses supporting side walls are also of Terra Cotta Hollow Tile.

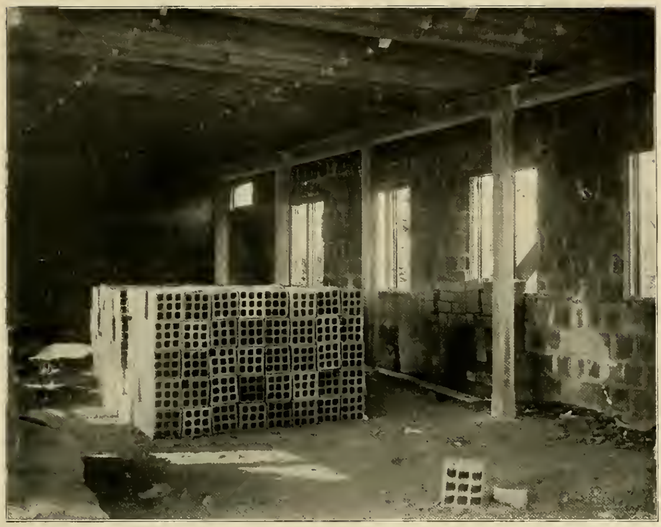


Plate 58.

Interior view of Basement Sunday School room, in church at West Orange, N. J.

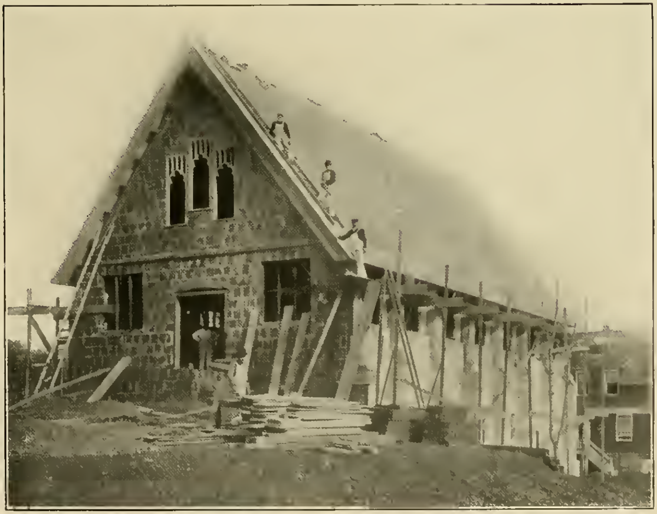


Plate 59.

Exterior view, during construction, of church at West Orange.

DETAILS OF CONSTRUCTION FOR

Fireproof Terra Cotta Hollow Tile Houses

THE illustrations on preceding pages show clearly the general methods of constructing buildings such as are described. The detail drawings shown on the following pages give specific information as to important details of carrying on construction of this character. These details can be readily applied to any contemplated work where Hollow Tile is used.

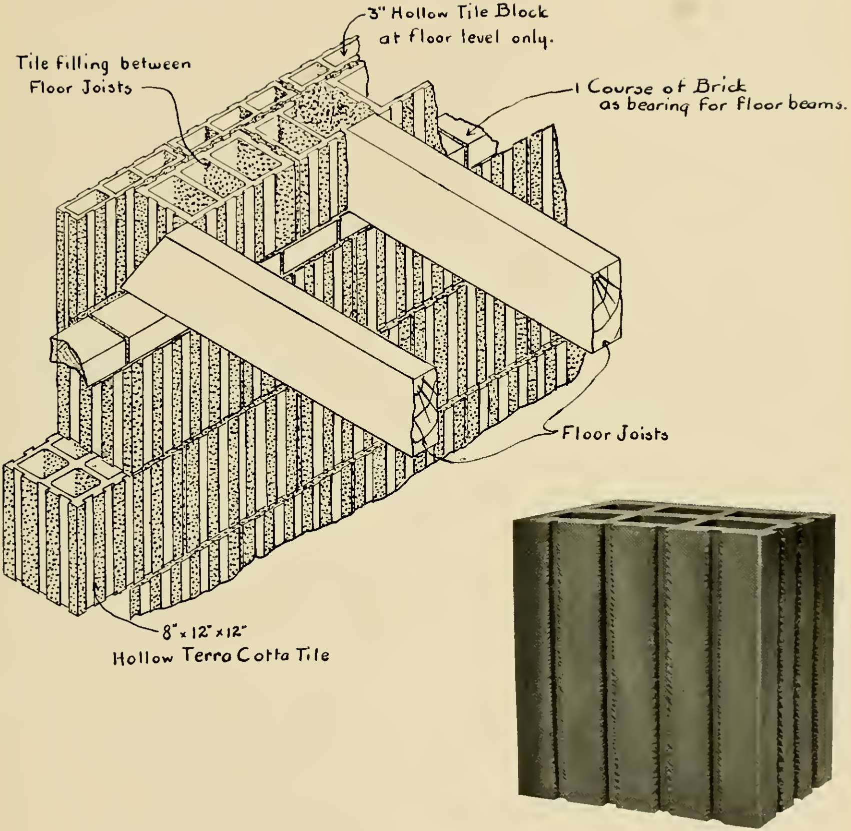

3" Hollow Tile Block at floor level only.
Tile filling between Floor Joists
1 Course of Brick as bearing for floor beams.
Floor Joists
8" x 12" x 12" Hollow Terra Cotta Tile

Figure 3 shows details of wall and floor construction for house of fireproof Terra Cotta Hollow Tile walls with wood floors, and illustration of the heavy web wall block used for residence construction. Note the dovetail scoring of this block which insures an absolute bond for stucco.

A building of the construction detailed above cannot be characterized as fireproof, except as to its walls. The walls, of course, give the superior insulating value of tile construction, insuring a warm dry interior in winter and a cool house in summer. They also permit plastering to be applied direct to tile wall without furring or lathing, making a further economy.

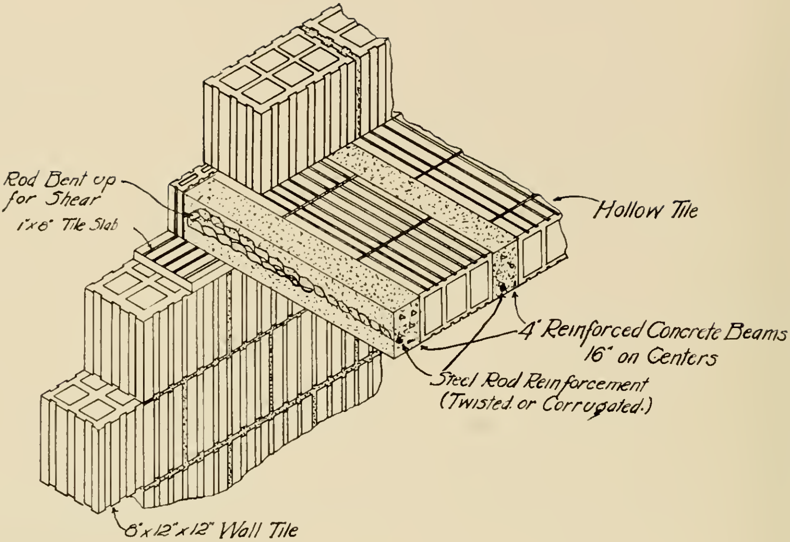

Rod Bent up for Shear
1"x6" Tile Slab
Hollow Tile
4" Reinforced Concrete Beams 16" on Centers
Steel Rod Reinforcement (Twisted or Corrugated.)
8"x12"x12" Wall Tile

Figure 4. Details of Wall construction of Terra Cotta Hollow Tile with fireproof floor of hollow tile and reinforced concrete floor beams.

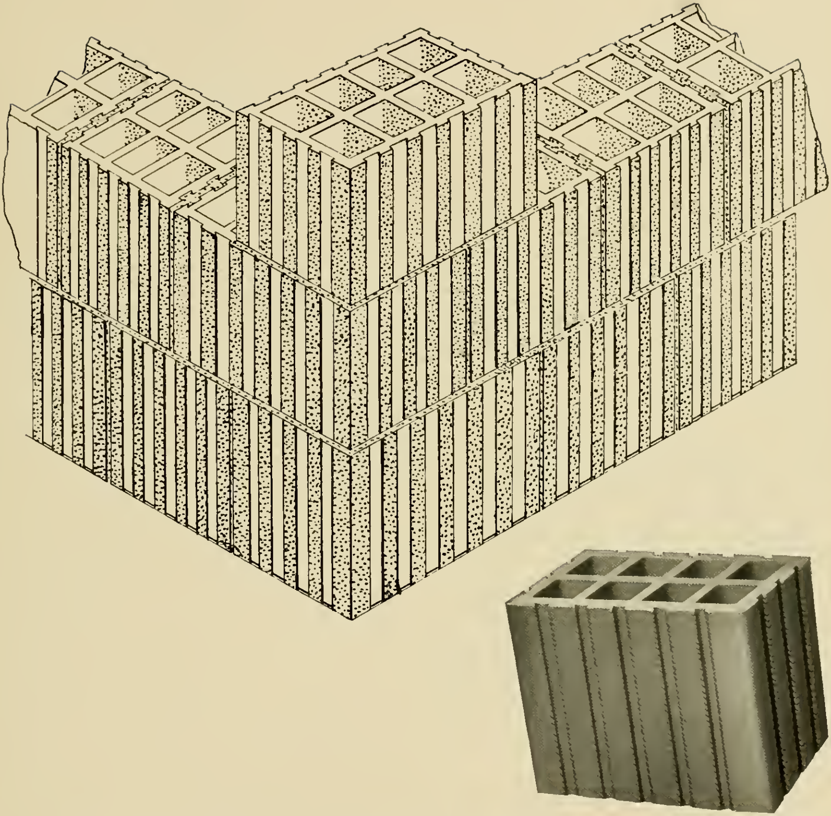


Figure 5. Detail showing use of Special Corner Block as illustrated. This block being four inches longer than the regular wall block permits of the overlapping of joints at corner in each alternate course thus insuring a thorough bond at the wall corner.

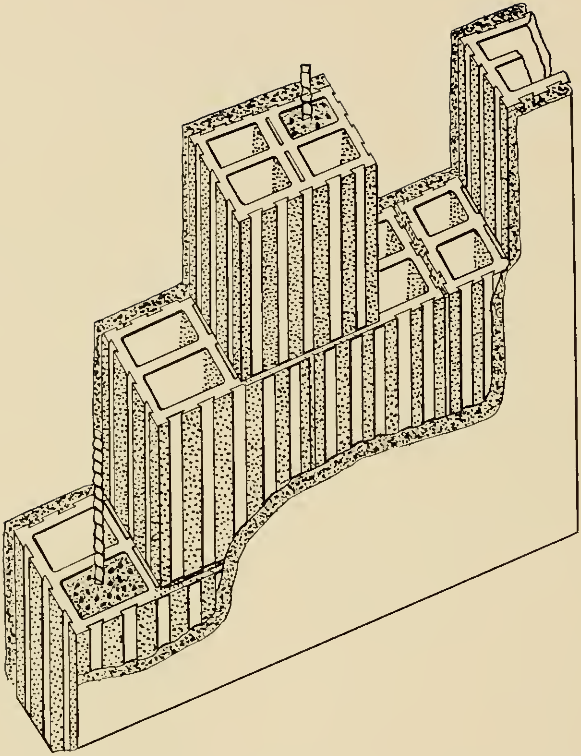
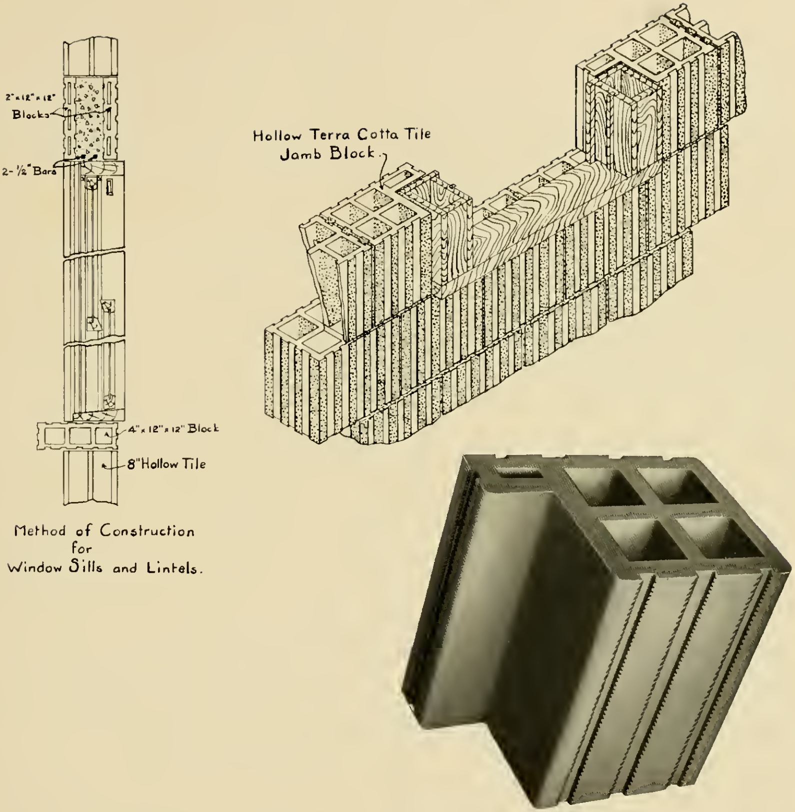
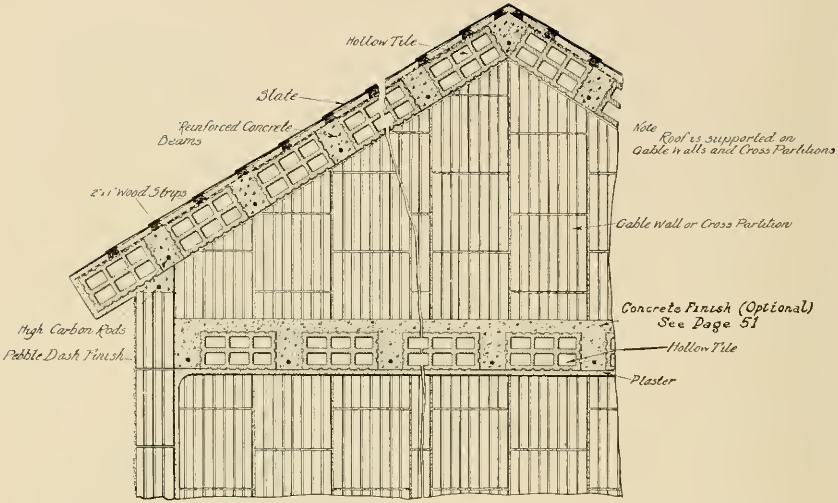


Figure 6. Detail of an effective and economical reinforcement of wall construction where reinforcement is desired. This method insures a tremendously strong wall.



Method of Construction
for
Window Sills and Lintels.

Figure 7. Details of Window Sill and Lintel Construction in connection with especially designed jamb block as illustrated.


Hollow Tile
Slate
Reinforced Concrete Beams
2"x1" Wood Strips
Note
Roof is supported on Gable Walls and Cross Partitions
Gable Wall or Cross Partition
Concrete Finish (Optional) See Page 51
High Carbon Rods
Pebble Dash Finish
Hollow Tile
Plaster

Detail of Roof & Floor Construction

Figure 8. One of the difficulties which has appeared in the building of fireproof houses at moderate cost, has been the securing of satisfactory roof construction. The problem has been to design a pitched or gable roof without the use of structural steel members. A flat fireproof roof could be readily designed without structural steel, but is not satisfactory to the architectural taste of all persons. A pitched roof using structural steel would considerably increase the cost of the building.

The plan shown above solves this problem most satisfactorily. It will be seen that the roof is of reinforced fireproof Hollow Tile construction similar to the floor construction shown in Figure 4, page 66. This construction bears on the end or gable walls of the building and on cross partitions of Hollow Tile built up solidly from the floor immediately below the roof. The entire roof load therefore is carried by the gable walls and cross partitions and there is no load to act as a thrust on the side walls.

By the insertion of nailing strips or sleepers as shown, the finished roof either of slate, tile, or composition, as may be desired, is readily laid.

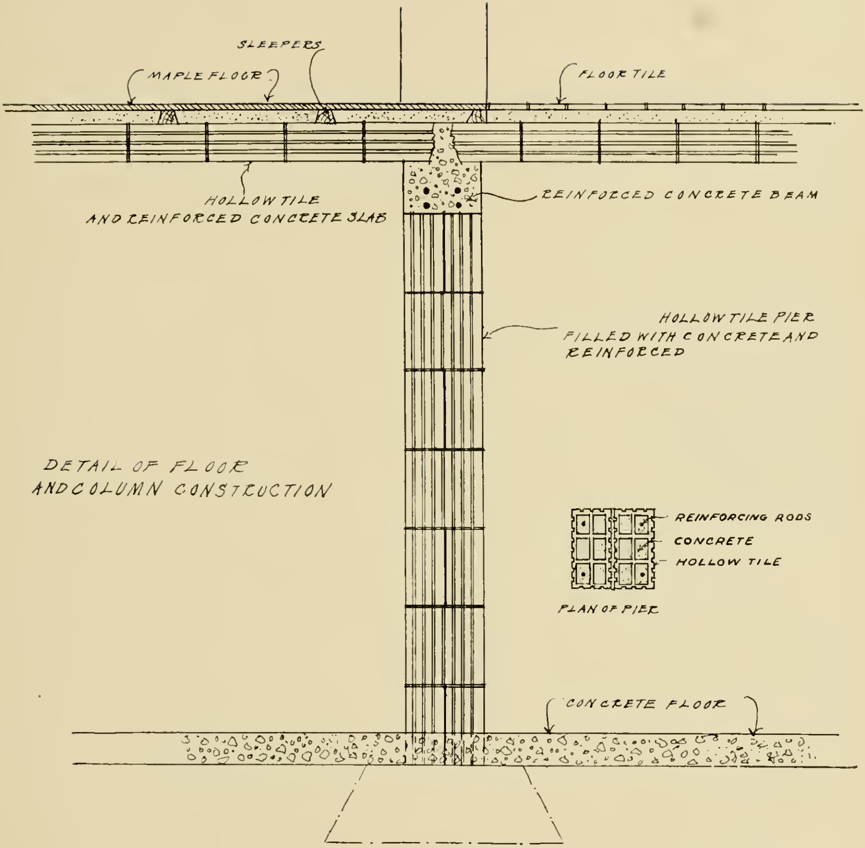

SLEEPERS
MAPLE FLOOR
FLOOR TILE
HOLLOW TILE AND REINFORCED CONCRETE SLAB
REINFORCED CONCRETE BEAM
HOLLOW TILE PIER FILLED WITH CONCRETE AND REINFORCED
DETAIL OF FLOOR AND COLUMN CONSTRUCTION
REINFORCING RODS
CONCRETE
HOLLOW TILE
PLAN OF PIER
CONCRETE FLOOR

Figure 9. Where partitions are not called for, as in cellars, it is necessary to carry the floors on girders which are in turn carried on columns (see illustration Plate 21, page 25).

The column construction in such cases is detailed above. After the tile is laid up in these columns the reinforcing steel is placed and the concrete poured into the hollow spaces of the tile, as shown in the small detail drawing. This gives an extremely strong column, capable of carrying a far greater load than would be called for in the construction of residence buildings and does away with any necessity for wooden centering for constructing columns.

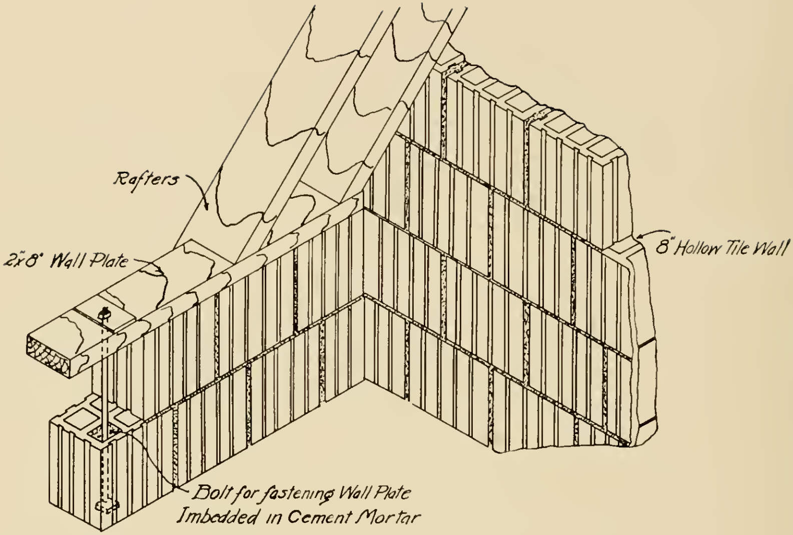


Figure 10. Detail of construction wood frame roof, carried on walls of Terra Cotta Hollow Tile.

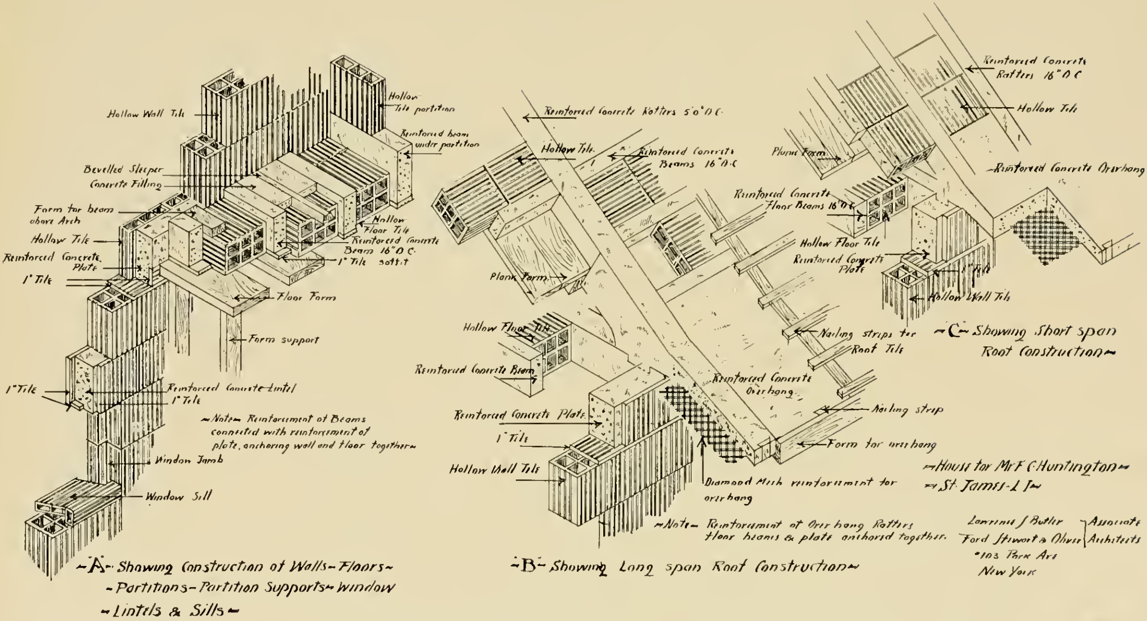

Hollow Wall Tile
Hollow Tile partition
Reinforced beam under partition
Bevelled Sleeper
Concrete Filling
Form for beam above Arch
Hollow Tile
Reinforced Concrete Plate
1" Tile
Hollow Floor Tile
Reinforced Concrete Beam 16" O.C.
1" Tile soffit
Floor Form
Form support
1" Tile
Reinforced Concrete Lintel
1" Tile
~Note~ Reinforcement of Beams connected with reinforcement of plate, anchoring wall and floor together~
Window Jamb
Window Sill
~A~ Showing Construction of Walls~Floors~ ~Partitions~Partition Supports~Window ~Lintels & Sills~
Reinforced Concrete Rafters 5'0" O.C.
Hollow Tile
Reinforced Concrete Beams 16" O.C.
Plank Form
Hollow Floor Tile
Reinforced Concrete Beam
Reinforced Concrete Plate
1" Tile
Hollow Wall Tile
Reinforced Concrete Overhang
Nailing strips for Roof Tile
Nailing strip
Form for overhang
Diamond Mesh reinforcement for overhang
~Note~ Reinforcement of Overhang Rafters floor beams & plate anchored together.
~B~ Showing Long span Roof Construction~
Reinforced Concrete Rafters 16" O.C.
Hollow Tile
Plank Form
Reinforced Concrete Overhang
Reinforced Concrete Floor Beams 16" O.C.
Hollow Floor Tile
Reinforced Concrete Plate
1" Tile
Hollow Wall Tile
~C~ Showing Short span Roof Construction~
~House for Mr F C Huntington~
~St James-L I~
Lawrence J Butler
Ford Stewart & Oliver
Associate Architects
*103 Park Ave
New York

Figure 11.—Details of a fireproof house complete. These details are from the drawings for the house built at St. James as illustrated on pages 44, 45 and 46.

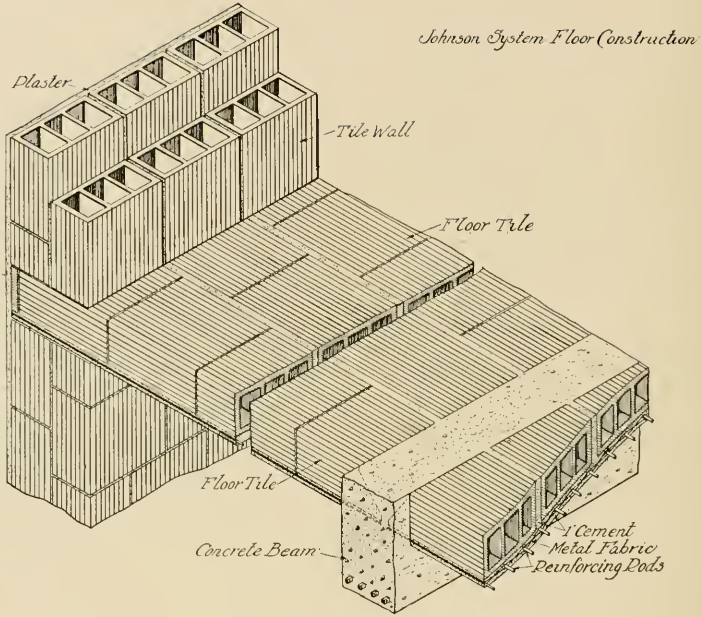


Figure 12. Detail of Johnson System Floor (Patented) carried on reinforced concrete beams and tile walls.

LOAD TABLE
of
Johnson System Floor

Detail of construction of floor shown on page 59. See Note *

Safe Live Load in Pounds per Square Foot—Factor of Safety—4.

Span in Feet	12 in. Tile $\frac{5}{16}$-in. Dia. Rod Weight of Floor per sq. ft. 55 lbs.	10-in. Tile $\frac{5}{16}$-in. Dia. Rod Weight of Floor per sq. ft. 52 lbs.	9-in. Tile $\frac{5}{16}$-in. Dia. Rod Weight of Floor per sq. ft. 48 lbs.	8-in. Tile $\frac{5}{16}$-in. Dia. Rod Weight of Floor per sq. ft. 45 lbs.	7-in. Tile ¼-in. Dia. Rod Weight of Floor per sq. ft. 42 lbs.	6-in. Tile ¼-in. Dia. Rod Weight of Floor per sq. ft. 37 lbs.	5-in. Tile ¼-in. Dia. Rod Weight of Floor per sq. ft. 35 lbs.	4-in. Tile ¼-in. Dia. Rod Weight of Floor per sq. ft. 29 lbs.	3-in. Tile ¼-in. Dia. Rod Weight of Floor per sq. ft. 27 lbs.
5	1986	1667	1268	1089	839	681	446	353	213
6	1586	1167	878	753	579	470	311	227	147
7	1156	847	644	553	425	341	223	165	113
8	881	644	488	422	324	263	171	125	79
9	696	507	383	333	254	206	132	113	61
10	558	407	308	264	202	163	105	76	48
11	458	337	253	219	165	133	86	62	39
12	386	282	210	179	137	111	71	51	32
13	326	234	178	152	116	93	59	43	26
14	278	202	152	129	98	78	49	36	23
15	241	175	130	111	84	68	42	30	18
16	210	151	113	97	73	58	36	26	15
17	189	133	99	75	63	51	31	23	....
18	164	117	87	72	56	45	26	22	....
19	146	103	77	66	49	39	22	....	....
20	129	92	68	58	43	34	20	....	....
21	117	83	61	51	38	30	....	....	....
22	104	75	54	46	34	26	....	....	....
23	95	67	49	41	30	....	....	....	....
24	86	61	44	37	....	....	....	....	....
25	77	55	39	....	....	....	....	....	....

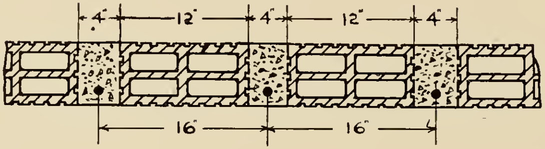
NOTE.

Attention is called to the fact that this construction is reinforced in both directions. The reinforcing rods (shown in detail drawing page 74) take the direct strains. The transverse strains are taken by a woven metal fabric running lengthwise of the arch and through this fabric the rods are interwoven at intervals of four inches.

LOAD TABLE

of

Terra Cotta Hollow Tile Floors, Combined with Reinforced Concrete Joists



Composition of Concrete: 1 Part Portland Cement—3 Parts Sand—5 Parts Stone or Gravel.
Working Strength of Steel=16000 lbs. per square inch.

Safe Live Load in Pounds per Square Foot—Factor of Safety=4.

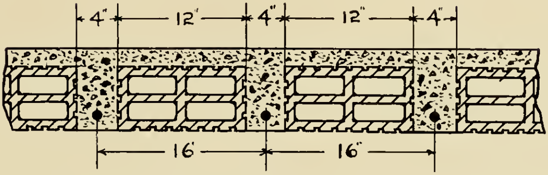
Span in Feet	15-in. Tile 1-in. Dia. Rod Weight of Floor per sq. ft. 82 lbs.	12-in. Tile 1-in. Dia. Rod Weight of Floor per sq. ft. 68 lbs.	10-in. Tile ⅞-in. Dia. Rod Weight of Floor per sq. ft. 58 lbs.	9-in. Tile ⅞-in. Dia. Rod Weight of Floor per sq. ft. 57 lbs.	8-in. Tile ⅞-in. Dia. Rod Weight of Floor per sq. ft. 48 lbs.	7-in. Tile ¾-in. Dia. Rod Weight of Floor per sq. ft. 43 lbs.	6-in. Tile ¾-in. Dia. Rod Weight of Floor per sq. ft. 38 lbs.	5-in. Tile ¾-in. Dia. Rod Weight of Floor per sq. ft. 30 lbs.	4-in. Tile ⅝-in. Dia. Rod Weight of Floor per sq. ft. 26 lbs.
5	3508	2512	1942	1608	1377	934	692	477	294
6	2408	1722	1327	1100	942	636	470	320	196
7	1748	1247	962	796	680	456	334	230	137
8	1323	941	725	596	509	338	248	168	99
9	1028	729	559	461	392	258	188	127	73
10	816	577	442	363	308	202	145	97	54
11	660	466	355	291	227	158	113	75	40
12	542	379	289	236	199	126	89	58	30
13	450	313	238	193	163	101	70	45	21
14	376	261	197	160	134	80	56	35	14
15	317	218	164	132	110	65	43	26	9
16	269	184	137	110	91	48	33	19	5
17	229	155	115	92	75	41	25	14	....
18	195	131	96	76	62	31	18	9	....
19	167	111	81	63	51	22	11	....	....
20	142	93	67	52	41	17	8	....	....
21	121	78	55	42	33	11	....	....	....
22	103	65	45	34	26	6	....	....	....
23	88	54	37	26	19	....	....	....	....
24	74	44	29	19	14	....	....	....	....
25	62	35	22	14	9	......	....	....	....

LOAD TABLE

of

Terra Cotta Hollow Tile Floors, Combined with Reinforced Concrete Joists

with 1½ inch Cement Top Finish



Composition of Concrete: 1 Part Portland Cement—3 Parts Sand—5 Parts Stone or Gravel.
Working Strength of Steel = 16,000 lbs. per square inch.

Safe Live Load in Pounds per Square Foot—Factor of Safety = 4.

Span in Feet	15-in. Tile 1¼-in. Dia. Rod Weight of Floor per sq. ft. 100 lbs.	12-in. Tile 1¼-in. Dia. Rod Weight of Floor per sq. ft. 86 lbs.	10-in. Tile 1⅛-in. Dia. Rod Weight of Floor per sq. ft. 76 lbs.	9-in. Tile 1⅛-in. Tile Rod Weight of Floor per sq. ft. 70 lbs.	8-in. Tile 1⅛ in. Dia. Rod Weight of Floor per sq. ft. 66 lbs.	7-in. Tile 1-in. Dia. Rod Weight of Floor per sq. ft. 61 lbs.	6-in. Tile 1-in. Dia. Rod Weight of Floor per sq. ft. 56 lbs.	5 in- Tile ⅞-in. Dia. Rod Weight of Floor per sq. ft. 48 lbs.	4-in. Tile ⅞-in. Dia. Rod Weight of Floor per sq. ft. 44 lbs.
5	6120	4899	3679	3092	2799	1939	1506	1067	750
6	4215	3374	2534	2123	1924	1329	1034	719	508
7	3070	2456	1840	1542	1396	959	747	522	365
8	2327	1859	1390	1165	1054	722	568	388	266
9	1818	1452	1084	906	819	556	419	297	201
10	1454	1160	863	720	650	439	339	231	154
11	1184	944	702	583	526	352	268	183	124
12	980	779	576	479	432	286	217	146	93
13	820	652	480	398	358	235	176	117	73
14	693	551	403	333	299	194	144	94	67
15	591	468	341	281	252	161	118	78	44
16	507	401	291	239	214	134	97	61	33
17	438	344	249	203	182	112	80	49	17
18	380	299	214	174	155	93	65	38	11
19	331	259	184	149	132	77	53	29	......
20	289	225	159	127	113	64	42	22	....
21	252	197	139	109	97	52	33	15	.....
22	221	171	118	93	82	42	25	10	......
23	196	149	102	79	69	34	18	......	....
24	170	130	87	67	58	26	12	......	....
25	149	114	74	56	49	19	......	....	....

Load-carrying capacity of semi-porous hard burned Terra Cotta Hollow Tile Blocks, as used in houses illustrated in this volume for exterior walls and interior partitions.

Size of Tile	Width of Wall 1 Tile Thick	Ultimate Load per Lineal Foot of Wall in Pounds	Width of Wall 2 Tiles Thick	Ultimate Load per Lineal Foot of Wall in Pounds
4″ x 12″ x 12″	4″	99,990	8″	199,980
6″ x 12″ x 12″	6″	116,655	12″	233,310
8″ x 12″ x 12″	8″	170,538	16″	341,076
10″ x 12″ x 12″	10″	174,980	20″	349,960
12″ x 12″ x 12″	12″	233,310	24″	466,620

For official report of test showing ultimate load-carrying capacity of blocks see page 79.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

ENGINEERING LABORATORIES

November 27, 1908

National Fire Proofing Company,
Old South Building,
Boston, Mass.

Dear Sir:-

I beg leave to state that on November 24, 1908, I tested samples of your fireproof hollow wall tile and herewith submit the following report:

I was informed that the blocks submitted for test were chosen to represent a fair average of the manufactured stock except that no broken or badly distorted blocks were used.

All the specimens were tested under compression in a horizontal Emery Machine, having a maximum capacity of 300,000 pounds. The load was applied in all cases directly against the open ends of the blocks which had been carefully ground to a smooth, plane surface to assure a good even bearing in the testing machine.

The object of the test was to demonstrate the value of the blocks as a structural building material, and, therefore, to ascertain their ultimate crushing strength.

Two types of blocks were submitted, there being three samples of the 10" wall tile and two samples of the 6" wall tile tested.

The summary of the results is as follows:

The three blocks of the first type were of hard burned dense material with six holes through them

All sides were scored with dove-tailed grooves to receive cement stucco and plaster.

The thickness of the outside shell was about 7/8" and the webs were about 3/4". The bed area of the blocks was about 10x12" and the height was approximately 12".

All three of the 10" blocks sustained the full load capacity of the testing machine, thereby developing a strength of 300,000lbs. per block or 5560 lbs. per square inch of sectional area.

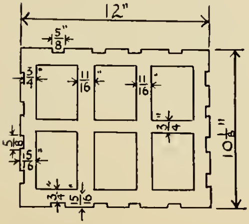
The two blocks of the second type were of hard burned dense material with three holes through them

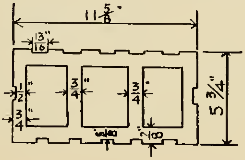
The thickness of the outside shell was about 7/8" and the webs were about 3/4". The bed area of the blocks was about 6x12" and the height approximately 12". One of the 6" blocks sustained the full load capacity of the machine, developing thereby a stress of 10030 lbs. per square inch of sectional area. The other 6" block failed under a load of 297,300 lbs thereby developing an ultimate crushing strength of 9940 lbs. per square inch of cross sectional area.

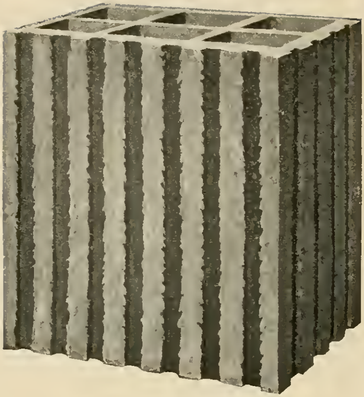
Respectfully submitted,

R.P.Bradbury

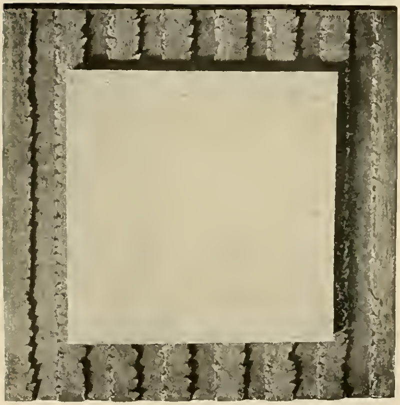
Instructor in Civil Engineering



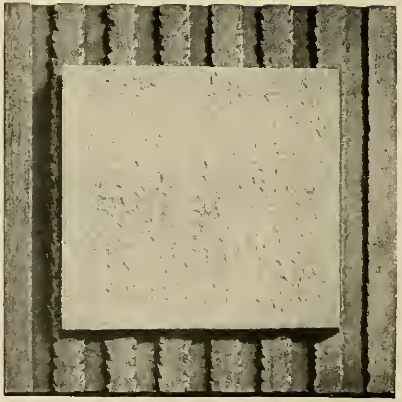




A Typical Wall Block.



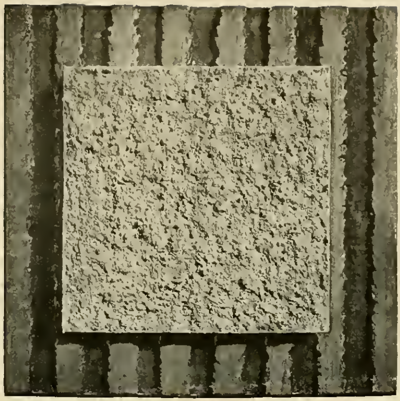
SAND FINISH
Composition of Portland Cement and Sand.



SAND FINISH STIPPLED
Composition of Portland Cement and Sand.

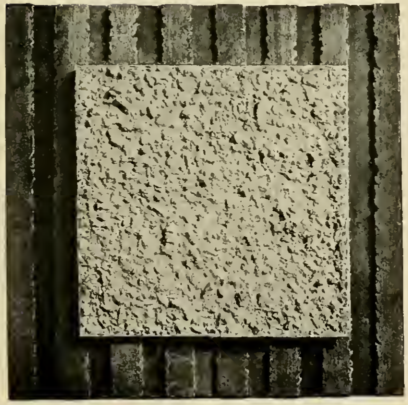
This and the following page illustrate Wall Blocks, plain and with Cement Finishes applied. There is an almost infinite variety of these finishes. We illustrate those which have proven most popular. Colors can be used if desired.

Approximate estimates from a responsible contractor indicate that the cost of these finishes applied, will average about seven cents per square foot of wall surface.



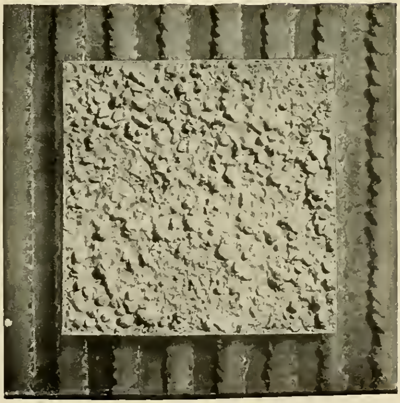
ROUGH CAST

With Torpedo Sand. Composition of Portland Cement and Torpedo Sand.



ROUGH CAST

With Stone Screenings. Composition of Portland Cement, Sand and Stone Screenings.



PEBBLE DASH

Composition of Portland Cement and Sand with Pebbles applied.

Standard Specifications for Exterior Cement Stucco Finish, on Hollow Tile Walls.

The tile should be well wetted before applying the mortar.

MORTAR.

Mortar to be composed of sharp sand and a standard Portland cement.

BROWN COAT.

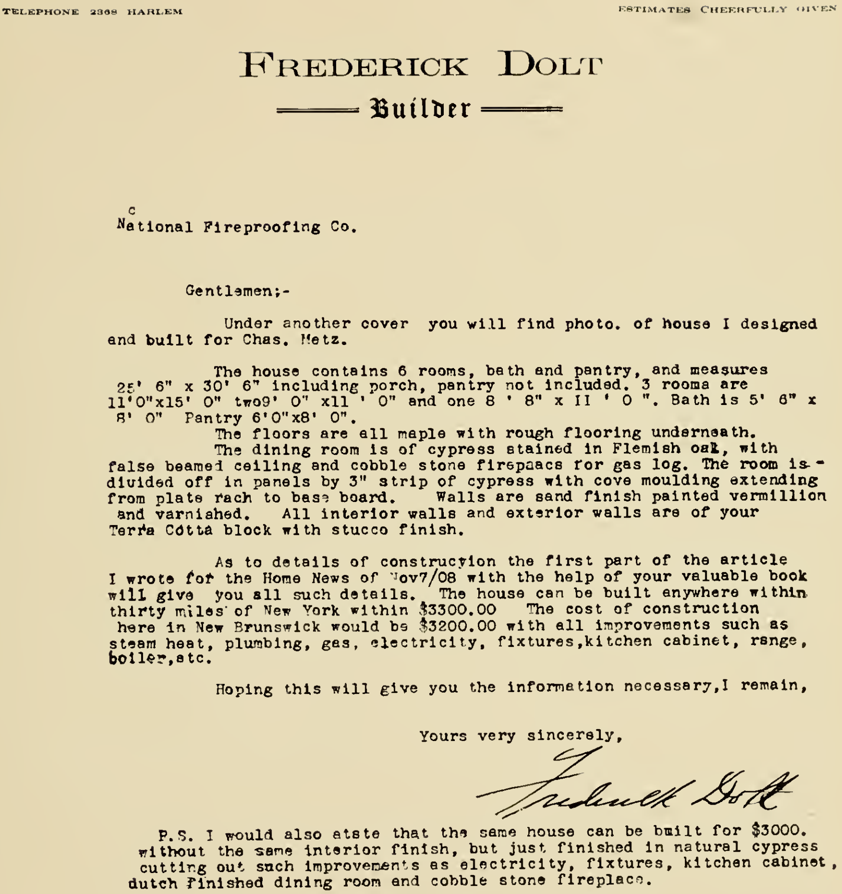
Sand and cement to be mixed in proportions of three to one with 6% of lime putty. Lime to be properly slaked and screened through a 1-16-inch mesh sieve and allowed to cool and then be mixed with water before mixing with the sand and cement. Sand and cement in the proper proportions to be mixed dry before mixing with the putty. All to be thoroughly mixed to the proper consistency before applying to the wall. All walls to have a good heavy coat of the foregoing composition and to be rodded and straightened by means of a straight edge and darby and left uniformly plumb and straight.

ROUGH-CAST COAT.

After the brown coat has thoroughly set apply the rough-cast coat, which is to be composed of lime stone screenings, sharp sand and cement in the following proportions: two of lime stone screenings, one of sand and one of cement. This mixture is to be made soft enough that it can be thrown on the wall by means of a shingle or paddle. Care must be taken to cover the entire surface with an even coat and left so that there will be no unevenness other than that caused by the roughness of the material. Enough of this mixture should be mixed at one mixing to cover an entire wall. The entire wall must be rough-casted at one time so that there will be no joinings, streaks or discolorations appear after the completion of the work and must be left in an even and uniform color in a first-class, workmanlike manner. If the weather is hot it will be necessary to spray the finished wall twice a day for a period of three or four days after the completion of the work.

If it be desired, gravel can be used in place of stone screenings in the same proportions.

If it be desired to leave a granule surface, use sharp sand in the proportions of three of sharp sand and one of cement. To be properly floated twice and left in an even granuled surface free from voids, chip cracks, blisters or other defects. The entire wall should be floated at one time to prevent joinings or streaks. If the weather is hot this should also be sprayed.



TELEPHONE 2368 HARLEM

ESTIMATES CHEERFULLY GIVEN

FREDERICK DOLT

Builder

National Fireproofing Co.

Gentlemen;-

Under another cover you will find photo. of house I designed and built for Chas. Metz.

The house contains 6 rooms, bath and pantry, and measures 25' 6" x 30' 6" including porch, pantry not included. 3 rooms are 11'0"x15' 0" two9' 0" x11 ' 0" and one 8 ' 8" x II ' 0 ". Bath is 5' 6" x 8' 0" Pantry 6'0"x8' 0".

The floors are all maple with rough flooring underneath.

The dining room is of cypress stained in Flemish oak, with false beamed ceiling and cobble stone fireplace for gas log. The room is divided off in panels by 3" strip of cypress with cove moulding extending from plate rack to base board. Walls are sand finish painted vermillion and varnished. All interior walls and exterior walls are of your Terra Cotta block with stucco finish.

As to details of construction the first part of the article I wrote for the Home News of Nov7/08 with the help of your valuable book will give you all such details. The house can be built anywhere within thirty miles of New York within $3300.00 The cost of construction here in New Brunswick would be $3200.00 with all improvements such as steam heat, plumbing, gas, electricity, fixtures,kitchen cabinet, range, boiler,etc.

Hoping this will give you the information necessary,I remain,

Yours very sincerely,

Frederick Dolt

P.S. I would also state that the same house can be built for $3000. without the same interior finish, but just finished in natural cypress cutting out such improvements as electricity, fixtures, kitchen cabinet, dutch finished dining room and cobble stone fireplace.

See illustration of house on page 36.

OFFICE OF
GROSVENOR ATTERBURY,
ARCHITECT,
20 WEST 43D ST.

CONCERNING

GROSVENOR ATTERBURY

STOWE PHELPS
JOHN A. TOMPKINS, 2D
W. LESLIE WALKER

TELEPHONE, NOS. 1834 AND 1835 BRYANT

NEW YORK, January 13, 1909

National Fireproofing Company,
170 Broadway, City.

Gentlemen;

I am in receipt of yours of January 11th in regard to your fire-proof hollow tile construction for country residences. To reply briefly to this would be rather a difficult matter, but perhaps the best answer I can make to you is that after carefully investigating the material and method of construction, I decided to adopt it in building my own house, the construction of which I have watched with unusual interest and care, and I am even more enthusiastic over it now than when I first began the work.

Both theoretically and practically it seems to me an ideal material and system of construction, where carried out and executed with intelligence and care, for high class residences, and I firmly believe it is bound to be the coming method of construction for such work, as well as many other kinds of buildings.

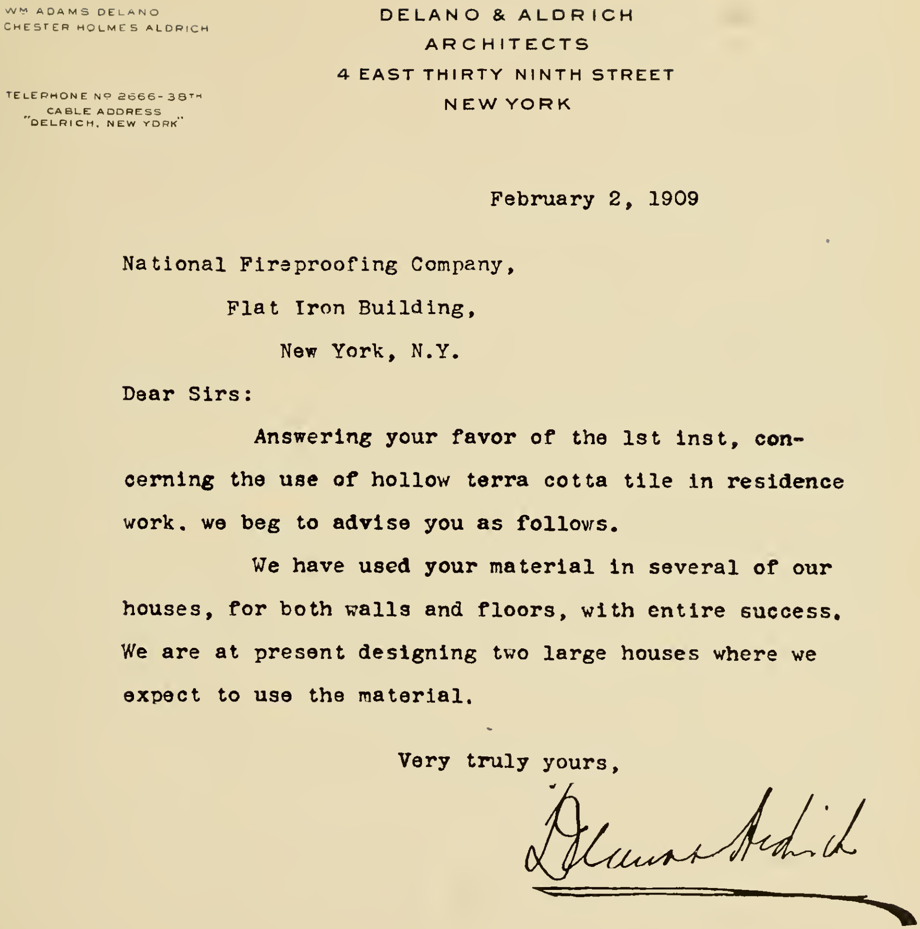
In your letter you compare it with frame construction, but to my mind such comparison should never be made, except with the view to substituting it for frame, as it is a masonry construction in every sense of the word, permanent, and fireproof, and as far as I can see, has all the advantages of masonry construction, and none of the disadvantages of the frame, which are numerous. Trusting that I have given you the information desired- if not kindly advise me - I remain,

Yours very truly,

W. Leslie Walker

WLW/V

See illustration on page 14.



WM ADAMS DELANO
CHESTER HOLMES ALDRICH

TELEPHONE NO 2666-38TH
CABLE ADDRESS
"DELRICH, NEW YORK"

DELANO & ALDRICH
ARCHITECTS
4 EAST THIRTY NINTH STREET
NEW YORK

February 2, 1909

National Fireproofing Company,
Flat Iron Building,
New York, N.Y.

Dear Sirs:

Answering your favor of the 1st inst, concerning the use of hollow terra cotta tile in residence work. we beg to advise you as follows.

We have used your material in several of our houses, for both walls and floors, with entire success. We are at present designing two large houses where we expect to use the material.

Very truly yours,

Delano & Aldrich

FORD, STEWART & OLIVER, ARCHITECTS

37 WEST 31st STREET
103 PARK AVENUE,
NEW YORK

TELEPHONE, 481—38th

LYMAN A. FORD
LEWIS STEWART
LESLIE ALLEN OLIVER

Feb.3,1909

National Fire Proofing Co.,

Dear Sirs:-

In reference to the use of your hollow tile for the construction of buildings we beg to state that we have used this material in several buildings of various kinds and find it highly satisfactory as a method of construction and comparatively inexpensive.

To obtain the best results both as to construction and expense it is necessary to have an intelligent and competent foreman and one sufficiently familiar with the construction to enable him to work out the various problems presented as the work proceeds.

The material adapts itself especially for country buildings.

Very truly,

Ford Stewart & Oliver,

To National Fire Proofing Co.
Flatiron Building,N.Y.

FOSTER, GADE AND GRAHAM,
ARCHITECTS.

Mortimer Foster.
John A. Gade.
Robert D. Graham.

281 Fourth Avenue, New York.
TELEPHONES { 1885 / 1886 } GRAMERCY.
Cable Address: "FOSGADE," New York.

February 2d, 1909

National Fireproofing Company,
Flatiron Building, New York.

Dear Sirs:-

We have used terra cotta blocks for interior and exterior wall construction and floor construction with much satisfaction and the results in economy, both of material, labor, and time, point to this method of construction as one well worthy of development.

Yours truly,

Foster Gade & Graham

SQUIRES & WYNKOOP
ARCHITECTS
44 CORTLANDT STREET
NEW YORK
TEL. 12 CORTLANDT

New York, N.Y. Nov. 1st, 1908

National Fire Proofing Co.,
B'way & 23d Sts.,
New York City.

Dear Sir:-

We have been designing and executing buildings in hollow terra cotta tile for the past three years in which time we have executed ten buildings. We consider the material nearly perfect from a constructive point of view and have no doubt that it will be the leading material within ten years. Your system when carried through completely has distinct advantages in safety and permanence over any method of construction of which we have any knowledge.

Yours very truly,

SQUIRES & WYNKOOP

per Frederick Squires

ROBERT W. GARDNER
ARCHITECT
122 WEST 28TH ST.
NEW YORK

March 22, 1909

National Fireproofing Co.,

Broadway & 23rd St. New York City.

Gentlemen:-

As you are kind enough to ask my opinion of hollow tile houses I am pleased to reply that my experience with them has been entirely satisfactory. In common with other architects I am looking for good building materials and am glad to endorse one when I find it, as experience seems to show in this case,

Yours very truly,

Robert W Gardner

CHARLES BARTON KEEN
ARCHITECT
BAILEY BUILDING
PHILADELPHIA

April 2nd, 1909

National Fireproofing Company,
Fulton Building,
Pittsburgh, Penna.

Gentlemen:-

Replying to your favor of the 1st inst., in re Mrs. N. McKee Graham's residence, at Edgeworth, Penna., which is built of terra cotta hollow tile, beg to advise you, that we are very favorably impressed with this material and intend to use it wherever the opportunity offers.

We consider it in the matter of dryness, warmth in winter, and coolness in summer, and has a suitable surface for exterior plastering or stucco far superior to concrete construction, and in the matter of enconomical construction, has a great deal in its favor.

Yours very truly,

C.B.K.

Chas. Barton Keen.

See illustrations on pages 42 and 43 of building referred to above.

SQUIRES & WYNKOOP
ARCHITECTS
44 CORTLANDT STREET
NEW YORK
TEL. 12 CORTLANDT

Mr. H. M. Keasbey,
B'way & 23rd Street,
New York City.

Dear Sir:-

Enclosed please find a picture of the Hubbell house in Plainfield. The principle point of interest about this building is its low cost. It is 31 x 36 exclusive of porches and pantry extension and only 17¢ a cu. ft. complete with heating, lighting, plumbing, and every thing else except lighting fixtures. This building could not have been built in frame for less than 16¢ a cu. ft.

Yours very truly,

SQUIRES & WYNKOOP

Frederick Squires

For illustration of building referred to above see plate 6, page 10.

COMPARISONS OF COST

The question of cost of construction is usually a controlling factor with the prospective house builder. This is equally true whether he builds as an investment or to secure a home.

Few builders realize, however, that variations in the cost of different houses are caused chiefly by differences in what may be termed the "superficial parts" of the building.

The point involved is simply this: Jones and Smith both desire a brick walled stone front house of exactly the same size, same ground area, same height, same number of floors, same dimensions as to width and length, same number of rooms arranged in the same manner.

So far, both using the same quality of materials and the same amount of labor, it is evident that the cost of both houses will be practically equal *for the basic structure*, i. e., the foundations, walls, floors, roofs and partitions. It is also apparent that up to this point one house is exactly the same as the other.

Now they part company. Jones wants mahogany wood work throughout. Smith is happy with birch. Jones wants several stained glass windows; Smith is willing to have clear glass throughout. Jones wants library walls of burlap with painted decorative panels; Smith is satisfied with a tinted plaster wall, etc., etc. The result is that Jones' house complete costs say fifty thousand dollars, and Smith's costs only ten thousand. Yet both buildings, so far as their actual structural parts are concerned, are exactly identical and cost the same amount.

In connection with fireproof construction, these points are especially appropriate. The cost of Terra Cotta Hollow Tile is the same whether used for the millionaire's residence, or for the clerk's. The cost per square foot to set it is the same. The one building can readily be made as durable, substantial and free from fire danger as the other.

Only where the dimensions and the "superficial parts" of the building are different, does the necessity arise for the need of the longer purse.

The figures given below, which are, of course, purely approximate are of interest in this connection.

Comparative building costs of different systems of building, based upon an average frame dwelling costing $10,000.00 complete, located in the vicinity of New York.

(a)	$10,000	Frame
(b)	$11,000	Brick outside walls, wooden inside.
(c)	$10,250	Stucco on expanded metal, wooden inside.
(d)	$10,500	Hollow terra cotta blocks stuccoed, wooden inside.
(e)	$12,000	Hollow blocks stuccoed—fireproof throughout except roof.
(f)	$14,000	Hollow terra cotta block walls faced with brick, fireproof floors and roof.
(g)	$15,000	Brick walls—fireproof floors and roof.

The above figures are based on an average taken from two architects and two builders, who have had experience with the methods of construction designated.

CAUTION

It should be borne in mind that there is a vast difference in the quality and strength of Terra Cotta Hollow Tile and that the results secured for buildings shown in this book and all data as to strength, are based on the use of material made by the National Fireproofing Company. To secure equally good results therefore, it is necessary for architects and owners to specify Terra Cotta Hollow Tile manufactured by the National Fire Proofing Company as shown in our illustrations and as detailed in Professor Bradbury's letter on page 79 and to assure themselves that this specification is complied with.

Our experts are at the service of the profession for consultation with regard to any or all details of construction.

We are glad to freely offer this service to Architects and Contractors as a means of furthering safe and economical methods for the use of our material.

Following are the publications of the National Fireproofing Company, copies of which may be secured upon application to any of the Company's offices :: :: :: ::

CATALOGUE STANDARD FIREPROOF CONSTRUCTION—Showing standard methods of fireproofing steel frame buildings.

CATALOGUE LONG SPAN FIREPROOF CONSTRUCTION—Showing utility of Hollow Tile used structurally.

FIREPROOF RESIDENCES OF REINFORCED TERRA COTTA HOLLOW TILE AND HOW TO BUILD THEM.

CORRECT CONSTRUCTION OF FIREPROOF BUILDINGS—An essay with illustrations, explaining proper fireproofing methods.

ONE HUNDRED AND TWENTY-TWO ACRES OF FIREPROOF FLOORS AND ROOFS—Showing utility of Johnson System Long Span Floor.

THE CITY UNBURNABLE—Essay with illustrations, on the prevention of conflagrations.

TRIAL BY FIRE AT SAN FRANCISCO—The Evidence of the Camera.

BLUE BOOK NUMBER ONE—Report of Fire, Load and Water Test on Reinforced Concrete Columns.

BLUE BOOK NUMBER TWO—Report of Fire and Load Test on Reinforced Concrete Girder.

A REVELATION IN FIREPROOF COLUMN CONSTRUCTION—Embodying official report of Robert W. Hunt & Co., of a load test on the "Invincible" Reinforced Terra Cotta Column.

REINCKE KREICKER CO
ENGRAVERS - PRINTERS
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